ELECTRICAL SOUTH

JUNE
1945

52-In Hotel Type

FANS by HUNTER-CENTURY

58th SEASON

24-In "Airspread" Ceiling

HUNTER, who has made fans and ventilators exclusively during 58 years, is now operating under War Production Board restrictions. • No more fans will be made except for the Army, Navy and Maritime Commission. HUNTER unfilled orders now on hand represent contracts with Government Agencies. • Certain sizes of belted exhaust types can be made available for Government hospitals and other war industries, subject to limited material inventories now on hand.

HUNTER FAN & VENTILATING COMPANY, INC.

Factory: FULTON, N. Y.

General Sales Offices: Memphis, Sterick Bldg. *Eastern Sales Office:* New York, 92 Warren Street *Western Sales Office:* St. Louis, 1706 Olive Street

Sales Offices:
ATLANTA
CHICAGO
DALLAS
HOUSTON
LOS ANGELES
PHILADELPHIA

Zephair Comfort Cooling and Commercial Ventilators

Sales Offices:
BOSTON
CLEVELAND
DETROIT
KANSAS CITY
NEW ORLEANS
PITTSBURGH

SYLVANIA NEWS
CONTRACTOR EDITION

JUNE *Published by* SYLVANIA ELECTRIC PRODUCTS INC., Salem, Mass. 1945

PUBLIC ENDORSES FLUORESCENT LIGHT

Wide Use in Homes Indicated by Survey

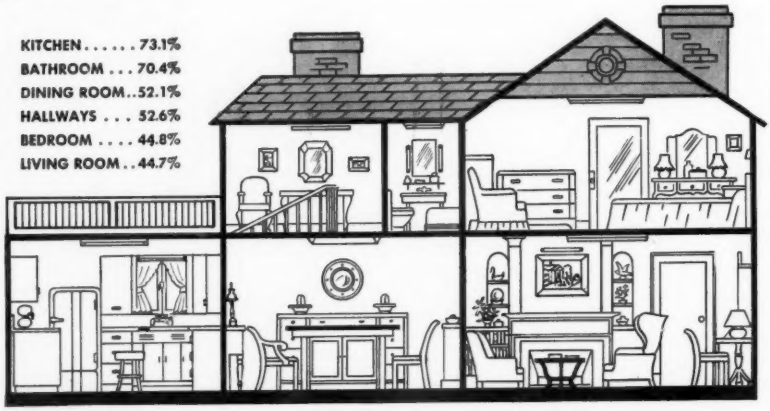
"In what rooms do you think fluorescent lighting is suitable?"

The answer: Kitchen—73.1%, Bathroom—70.4%, Hallways—52.6%, Dining room—52.1%, Bedroom—44.8%, Living room—44.7%.

This was one question asked recently in a nationwide survey conducted by one of the country's leading market research organizations for Sylvania's Sales Research Department.

Ever since the industrial-commercial world accepted fluorescent as the ideal light source, home owners have been changing their ideas about domestic lighting. Through national advertising and the distribution of educational material, Sylvania has been taking concrete steps in bringing this change about.

So that now the "average person" is receptive towards fluorescent lighting in his own house. Contractors have here an opportunity to enter a vast new field for fluorescent lighting installations, as soon as conditions permit the construction and remodeling planned by millions of home owners.



HIGHER RATINGS SCORED BY 20W AND 40W LAMPS

Chart Shows Increased Operating Efficiency In Popular-Sized Fluorescents

LUMEN OUTPUT OF SYLVANIA FLUORESCENT LAMPS

LAMP	COLOR	Total Lumen Output (after burning for 100 hrs.)		Approx. % of initial lumens/watt at 70% of rated life		
		Previous	New	Rated Avg. Life	Cycling	%LPW
20W-T12	White	860	880	2500	3 Hr.	84
				4000	6 Hr.	76
				6000	12 Hr.	70
40W-T12	White	2100	2160	2500	3 Hr.	84
				4000	6 Hr.	76
				6000	12 Hr.	70

Latest of Sylvania's fluorescent lamp lumen output and efficiency data—for two of their most popular sizes—is contained in the above chart.

This tabulation indicates a more accurate measure (based on indications from field performance) of the high performance that these widely-used T-12 lamps can achieve.

POSITION INDICATORS

In addition, these are two of the sizes that are fitted with one of Sylvania's most recent developments—the position indicator. Molded into the new plastic base, the indicators are placed on the shoulder of the cap at right angles to the pins. When the lamp is correctly inserted into the fixture one of these indicators points down. A touch of the finger is the only check required for precise positioning.

SYLVANIA ELECTRIC

MAKERS OF FLUORESCENT LAMPS, FIXTURES, ACCESSORIES; INCANDESCENT LAMPS; RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES

ELECTRICAL SOUTH is published monthly by W. R. C. Smith Publishing Co., Marietta, Ga., and Atlanta, Ga., U. S. A. Subscription rates, United States and Possessions, $1.00 for one year; Canada, $1.50 per year; Foreign Countries, $2.00 per year. Entered as second class matter at the postoffice, Marietta, Ga., under Act of March 3, 1879.

Volume 25 Number 6

● *Skimming over forests, jungles or open country . . . hurdling mountains, valleys, rivers, our Army Air Forces can lay combat telephone wire (Okonite plants make thousands of miles a month) at speeds up to 110 miles an hour. Using equipment developed by the Signal Corps, two continuous five-mile circuits can be paid out during a single flight of a light "grasshopper" plane.*

but here's where *OUR* speed counts

● **At home the 7th War Loan is on . . . one mighty effort instead of the two we had up to this time last year . . . a challenge to all of us in industry to get quickly and solidly behind our local bond drive.**

Sure — it's a big job to top our quota. Everything about this war is big including our responsibility to those in uniform. Our fighters are depending on us at home to put our job over. It's the least we can do for them — and the War Bond purchase window is the place where your speed counts most now.

OKONITE SINCE 1878

OKONITE

insulated wires and cables including combat wire

The Okonite Company, Passaic, N. J. • Okonite-Callender Cable Co., Inc., Paterson, N. J. • Hazard Insulated Wire Works Div., Wilkes-Barre, Pa.

4081

we named him nubun

HE'S HEADED FOR BIG THINGS
IN THE ELECTRICAL WORLD

nubun

U. S. ELECTRICAL WIRES & CABLES

UNITED STATES RUBBER COMPANY

we named him nubun

HE'S HEADED FOR BIG THINGS IN THE ELECTRICAL WORLD

Right on the threshold of electricity's most promising era comes NUBUN—a revolutionary development in wiring insulation.

Scientists of U. S. Rubber Company fathered this newcomer . . . to provide better, safer wiring for countless new electrical installations . . . in homes and factories, on farms, in communications services.

Research, starting with the rubber molecule itself, led to a remarkable new buna rubber compound and a unique method of applying it through a process of dipping and drying, followed by vulcanization.

As a result Nubun permits perfect centering of the wire, a much smaller over-all diameter and provides an insulating sheath that is flexible, moisture-resistant, tough.

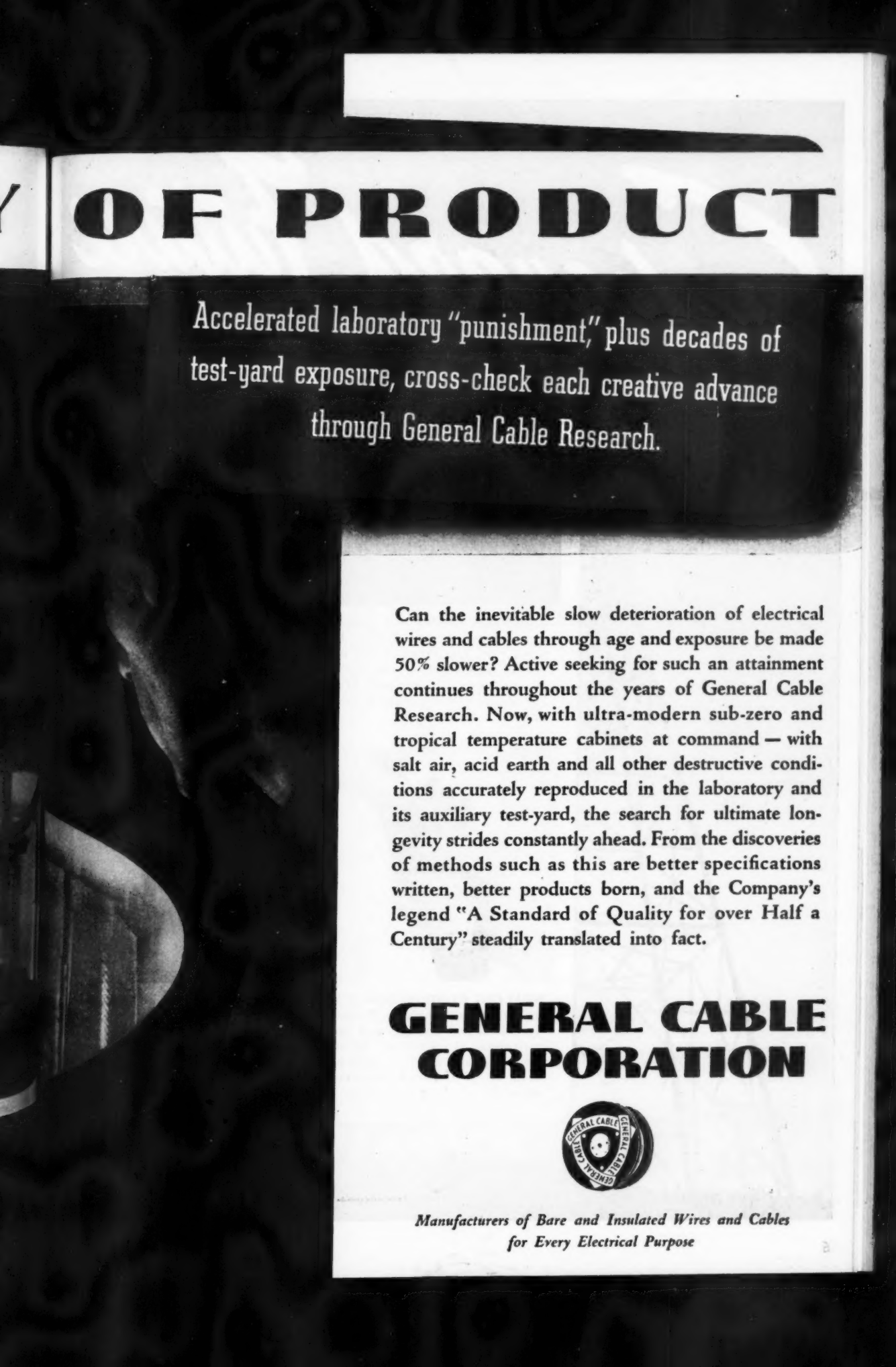
Watch this lusty baby grow. You'll be hearing a lot about Nubun, and his success in the busy peaceful days ahead.

UNITED STATES RUBBER COMPANY

1230 Sixth Avenue, Rockefeller Center, New York 20, N. Y. • In Canada: Dominion Rubber Company, Ltd.

LONGEVITY

Here, the moisture-permeability of a synthetic is tested in the "Weatherometer", a device which accurately measures the relative time-resistance of various insulating materials to the most damaging elements of weather:—ultra-violet rays, wind, moisture.



Y OF PRODUCT

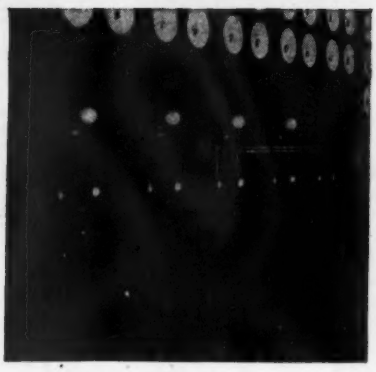
Accelerated laboratory "punishment," plus decades of test-yard exposure, cross-check each creative advance through General Cable Research.

Can the inevitable slow deterioration of electrical wires and cables through age and exposure be made 50% slower? Active seeking for such an attainment continues throughout the years of General Cable Research. Now, with ultra-modern sub-zero and tropical temperature cabinets at command — with salt air, acid earth and all other destructive conditions accurately reproduced in the laboratory and its auxiliary test-yard, the search for ultimate longevity strides constantly ahead. From the discoveries of methods such as this are better specifications written, better products born, and the Company's legend "A Standard of Quality for over Half a Century" steadily translated into fact.

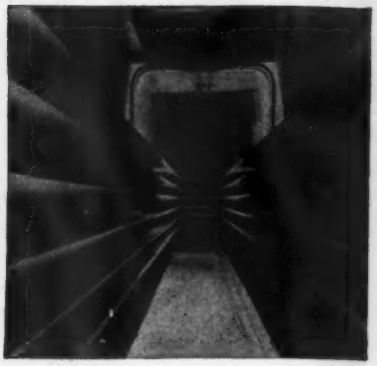
GENERAL CABLE CORPORATION

Manufacturers of Bare and Insulated Wires and Cables for Every Electrical Purpose

Safeguard Future



ASBESTOS EBONY is a permanent, inorganic mineral product. It won't rust, rot, shrink, crack or buckle. Impervious to water, gas, oil, and ordinary chemicals. Has high dielectric strength and insulation resistance.



TRANSITE CABLE TRAYS are made of an incombustible, strong, corrosion-resistant material. Designed to support cables. Transite Cable Trays save space, provide greater accessibility, cost less to install and need no maintenance.

SEALING COMPOUNDS. J-M makes several—Duxseal, Pakseal, Tranolseal and Uniseal, each one with special characteristics. All are easily workable at 35° F., with no slump at 300° F. They won't harden materially when exposed to air.

TRANCELL sheets are lightweight, strong, fire-resisting . . . excellent for cell structures, doors, and partitions. J-M Trancell conserves space, reduces floor loading, saves cost, since equipment can be bolted directly to it.

Construction . . .

PLAN TO USE THESE *Safer* ELECTRICAL MATERIALS

WHEN the green light "Go Ahead!" flashes for plant renewal and future expansion . . . *be ready to put these dependable Johns-Manville Electrical Materials to work for you.*

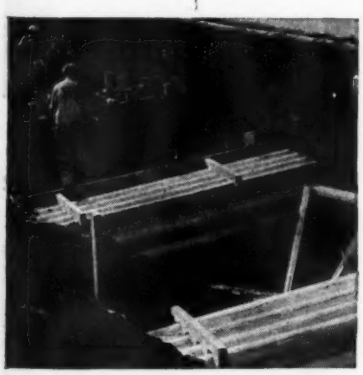
During the past critical years of sustained peak loads, J-M materials have helped engineers avoid waste and cut costs . . . by savings on installation expense, by reduced fuel consumption. And J-M Electrical Materials help further by providing an *extra* margin of safety!

Developed in the extensive Johns-Manville Research Laboratory, J-M-Electrical Materials are backed by the know-how acquired through 87 years of experience in solving construction problems.

* * *

All J-M Electrical Materials are described in Catalog GI-6A. For your copy, write: Johns-Manville, 22 E. 40th Street, New York 16, N. Y.

CABLE FIREPROOFING. Niagrite-Asbestoment, consisting of Niagrite, a commercially pure asbestos felted tape with or without reinforcement, and Asbestoment, an efficient refractory material, provides fireproof protection for cables.



TRANSITE CONDUIT and KORDUCT, made of asbestos fiber and cement, are fireproof, highly resistant to corrosion, electrolysis, and soil chemicals . . . are readily installed. Transite Conduit needs no concrete envelope underground.

Other Johns-Manville Products for the Electrical Industry

Chemstone
Electrobestos
Asbestos Tapes
Friction Tapes
Splicing Compounds
Transite Asbestos Sheets
High Temperature Insulation
Refractories
Transite Partitions
Acoustical Materials
Packings
Built-Up Roofing
Industrial Flooring
Transite Pressure Pipe

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville Electrical Materials

Reduce outage...

with G-E 2-WAY FM RADIO

THE STORM STRIKES. A crashing tree weighs heavily on a feeder. The night dispatcher calls the maintenance crews nearest the affected area and within minutes each point of potential danger is located and isolated.

G-E 2-way FM radio can help your maintenance department reduce outage. It will provide a sure means of instantaneous communication between dispatcher and field crew and between each field crew and every other. It will enable the same maintenance crews to serve wider areas. It will definitely lower service costs.

Government regulations now permit new installations of 2-way FM radio for important requirements of utility companies. Let your General Electric representative help prepare your applications.

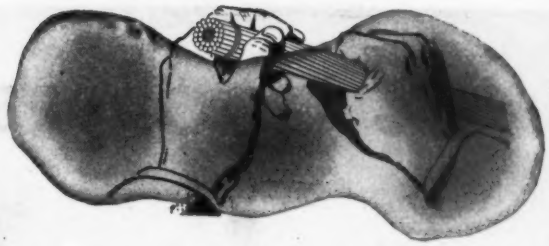
Ask your G-E sales engineer how G-E 2-way FM radio can improve communication in your particular system. He will be glad to discuss your problems and have a specialist assist in planning the most effective and economical installation for your needs. *Electronics Department, General Electric Company, Schenectady 5, New York.*

Everything for 2-Way Radio

GENERAL ELECTRIC

165-D12-6910

ALCOA A-C-S-R

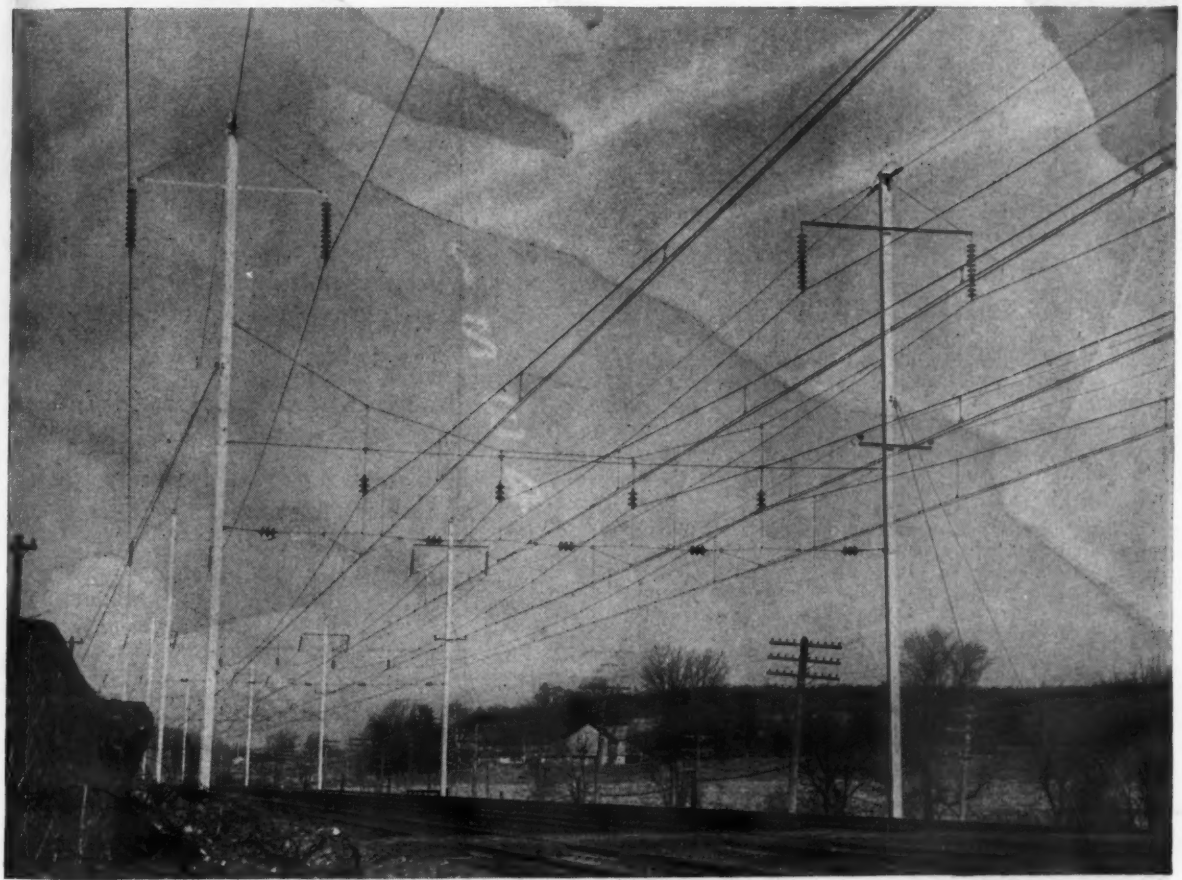


One of the most dependable conductors of electricity on the Pennsylvania Railroad

This conductor is always on the job . . . always ready for service . . . always dependable . . . it's the Alcoa A.C.S.R. (Aluminum Cable Steel Reinforced) used on the Pennsylvania Railroad between Paoli and Enola.

Aluminum wires around a core of steel provide the combination of high current carrying capacity, high strength and dependability so important in the operation of electric lines.

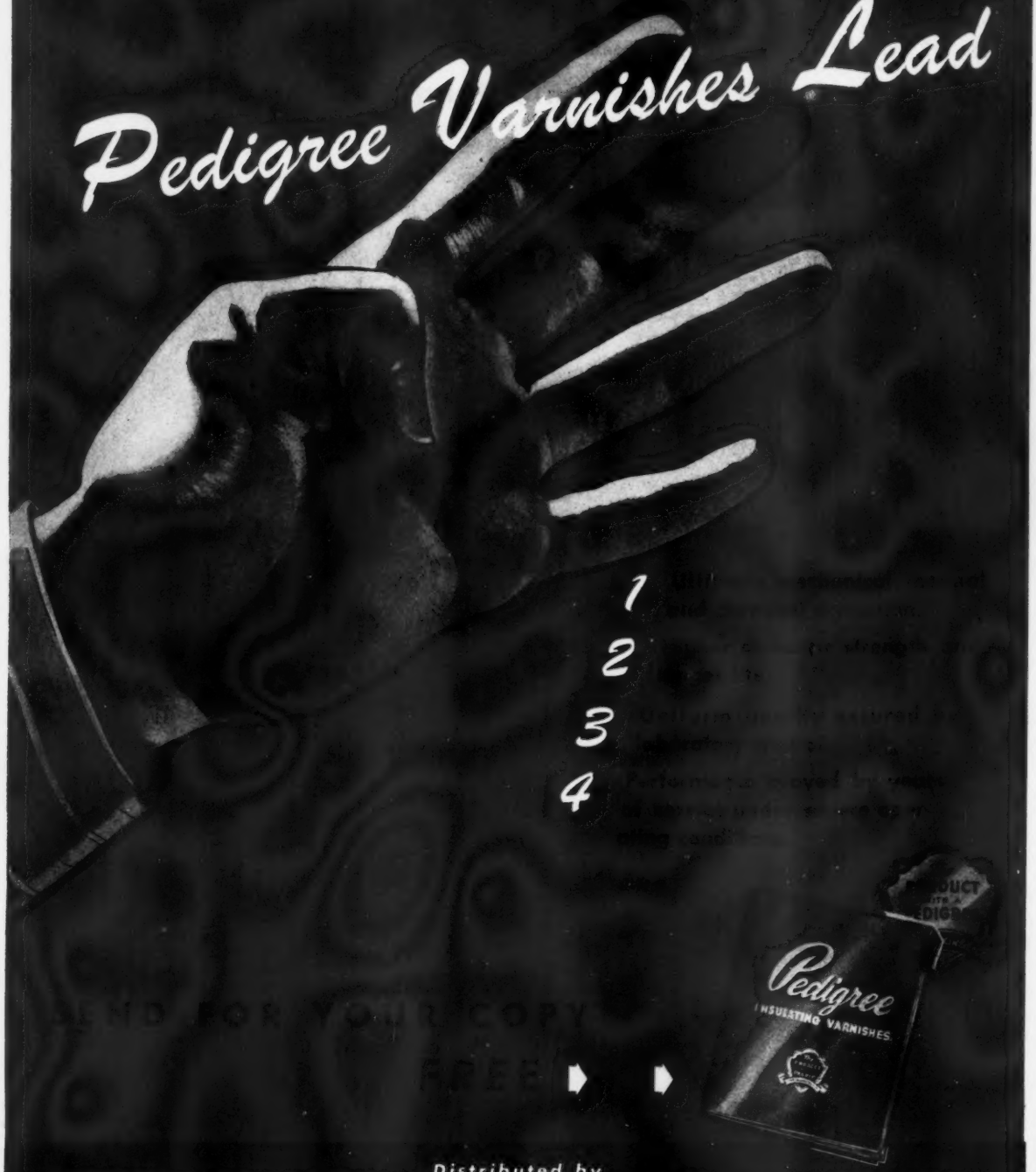
More than a million miles of Alcoa A.C.S.R. are now in service as proof that you can depend upon it to deliver the goods. ALUMINUM COMPANY OF AMERICA, 2164 Gulf Building, Pittsburgh 19, Pa.



477,000 cm A. C. S. R. operating at 132,000 volts is used on the Paoli-Enola (Harrisburg) section of the Pennsylvania Railroad

ALCOA A-C-S-R

Pedigree Varnishes Lead



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FRIGIDAIRE DEALER
OPERATING GUIDE
SERVICE SECTION
THE FRIGIDAIRE SERVICE BUSINESS AND ITS PROFIT OPPORTUNITIES
... FACILITIES REQUIRED ... SELECTING, TRAINING AND COMPENSAT-
... SERVICE PERSONNEL ... ESTIMATING PARTS REQUIREMENTS AND
MAINTAINING PROPER INVENTORY ... SELLING SERVICE ... HANDLING
... CALLS ... GENERAL SERVICE POLICIES ... APPLIANCE SERVICE
... COMMERCIAL AND AIR CONDITIONING SERVICE POLICIES
... NATIONAL USER SERVICE POLICIES.

Here's why Frigidaire Dealers everywhere are saying "It's the greatest thing we've ever seen!"

"Most outstanding piece of helpful literature ever presented to the Service Dealer Organization; another 'Frigidaire First'."

"Complete in every detail. A fine piece of material to place in the hands of both old and new dealers."

Comments like these show how enthusiastically Frigidaire Service people in the field are hailing the unique Service Section of Frigidaire's new Dealer Operating Guide.

There's good reason for their enthusiasm. For this book offers practical help and authentic information on every phase of the service business—

An entire chapter explains service department arrangements, provides information on equipment and tools. Another chapter shows how to select and train service personnel, compares the advantages of various serviceman-compensation plans. Still another chapter shows how to operate a record system on service parts, gives useful tips on ordering parts . . .

Two invaluable chapters point out special opportunities for selling service, show how service calls can lead to future equipment sales, give reliable advice on establishing—and collecting—service charges . . .

Available Only to Frigidaire Servicing Dealers and Authorized Service Stations

This exceptional Service Guide condenses into one practical, usable volume the service "know how" of hundreds of Frigidaire Dealers . . . the fruit of more than 25 years of service experience . . . the vast technical knowledge of the entire Frigidaire Service Organization. Another exclusive advantage for the *Frigidaire* Dealer, it's one more reason why Frigidaire Dealers will continue to enjoy the kind of service leadership that pays off in . . . *Sales Leadership!*

Look to Frigidaire for Leadership through . . . DEALER AIDS!

For Excellence in War Production

FRIGIDAIRE
Division of
GENERAL MOTORS
DAYTON 1, OHIO • LEASIDE 11, ONTARIO

Peacetime builders of
REFRIGERATORS • RANGES • WATER HEATERS
HOME FREEZERS • ICE CREAM CABINETS
COMMERCIAL REFRIGERATION • AIR CONDITIONERS
BEVERAGE, MILK, AND WATER COOLERS

Cooler Cables!

LABORATORY TESTS PROVE:

TRANSITE DUCTS DIFFUSE HEAT FASTER!

FROM LABORATORY TESTS lasting more than two years comes proof of the superior heat-dissipating qualities of Johns-Manville Transite Ducts.

By applying the data from the tests to specific field conditions, J-M Engineers have determined the comparative I^2R losses of underground ductways in actual operation. They have found, as a result of a number of such studies, that Transite Ducts dissipate these losses up to 13% faster than the other ductways tested.

It is apparent, therefore, that cables in Transite Ducts have a higher inherent load capacity. Or, carrying rated loads, cables will run cooler, thereby reducing copper losses and increasing cable insulation life.

Transite Ducts are strong, immune to rust and rot, incombustible, not affected by electrolysis or galvanic action. Smooth bore makes possible long cable pulls and easy replacements. Long, lightweight lengths can be quickly installed. And, a variety of fittings simplifies even the most complicated installations.

For full information write for Data Book DS-410, Johns-Manville, 22 East 40th Street, New York 16, New York.

Johns-Manville ***TRANSITE DUCTS***

CONDUIT for use without concrete

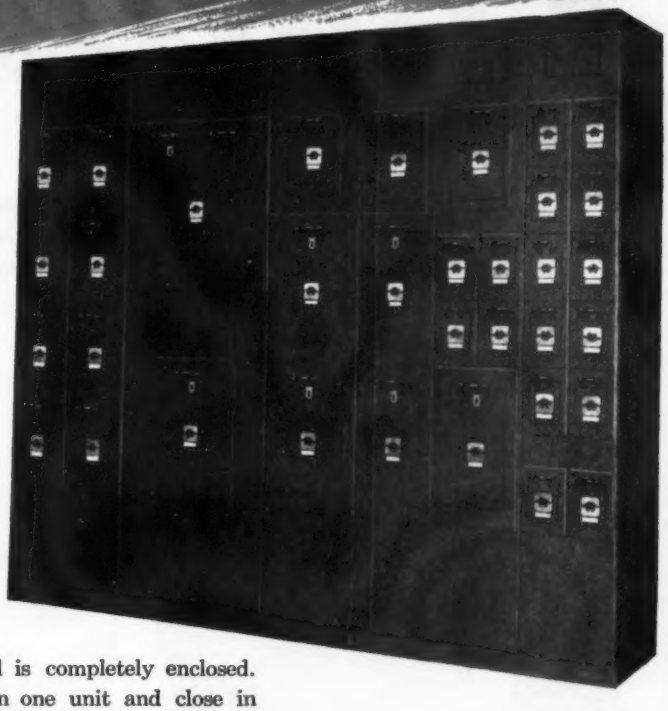
KORDUCT for concreting in

JOHNS-MANVILLE JM PRODUCTS

Take SWITCHBOARDS out of the "SPECIALTY" Class

FA TRADE MARK

KLAMPSWITCHFUZ



The FA Klampswitchfuz safety type switchboard is completely enclosed. Its hinged doors contain both switch and fuse in one unit and close in "on" and "off" positions. Heavily silvered copper contacts are *squeezed** together in one locking motion that clamps fuses at the same time. Fuses are instantly accessible on the *outside* when doors are open — where hands cannot possibly come in contact with live parts.

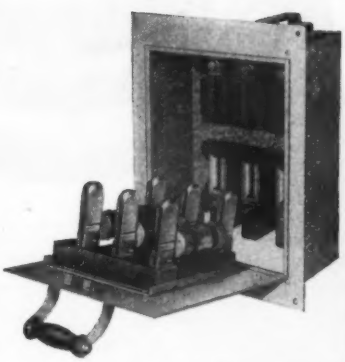
Build Your Switchboard with "Standard Units"

You receive the savings from quantity production of standard pre-assembled units, and you can't find a *better* switch at any price. Stripped of the attachments that break, stretch, or wear out—that add to the cost but not to the efficiency—these units are *built to give trouble-free service year after year.*

Flexible, too, for changing plant conditions: full panels can be added or removed quickly, without loss of valuable production time. Completely assembled at the factory, they come ready to be installed.

CAPACITIES

FA Klampswitchfuz units are made in capacities of 30 to 1800 amperes, 250 volts AC and DC—30 to 600 amperes, 575 volts AC, in 2, 3 and 4 pole types, single and double throw. Approved by Underwriters' Laboratories, Inc., as operating switches for 600 amperes and less, 250 volts AC and DC, and 200 amperes and less, 575 volts AC. All others approved as disconnect switches.



Note the simple, sturdy construction of the 3 pole, 200 ampere unit.

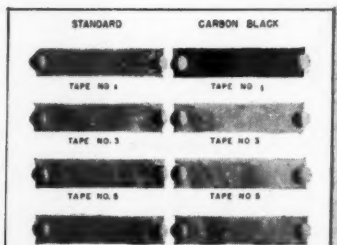
See our listing in "Sweet's," or write for name of nearest FA Representative.

*Compression contact on 200 ampere capacities and less—FA Kamklamp fuseholders on 400 ampere capacities and up.

Frank Adam
ELECTRIC COMPANY
P. O. Box 357 • St. Louis, Mo.

Makers of Busduct, Switchboards, Panelboards, Service Equipment and Enclosed Switches

DON'T LET *Oxidation* BOOST YOUR OPERATING COSTS!



Ionization damage on paper tapes, standard model VS Type CB model

TYPE CB (CARBON BLACK) CABLE

HIGHLY ADSORBENT carbon-black paper in Type CB Cable effectively blocks the oxidation associated with ordinary oil-impregnated paper cables.

This *special* carbon-black paper actually purifies the oil—adsorbs oxidation products caused by heat, electrical stress. Naturally this construction assures longer cable life, more value for your cable dollar.

Ionization discharges are reduced, virtually preventing dendrites and wax formation in the cable. There is a definite over-all increase in cable stability.

There has not been a single report of electrical failure in any Type CB Cable in service. Ask to see graphic demonstrations of its all-round efficiency. 45304

ANACONDA

Anaconda Wire & Cable Co.

GENERAL OFFICES: 25 Broadway, New York City 4 — *Subsidiary of Anaconda Copper Mining Company*

CHICAGO OFFICE: 20 North Wacker Drive 6 • Sales Offices in Principal Cities

ELECTRICAL SOUTH

VOL. 25 JUNE 1945 NO. 6

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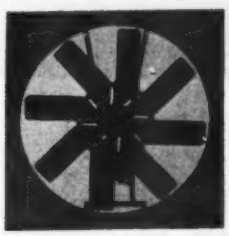
"It's really a slick job! Shows photos and features of every type Coolair fan with complete dimension and performance dope right near each fan photo so you can find what you want quick.

"Thing I like best is the section on laying out commercial and industrial jobs. You can be *sure* of giving your customer the ventilating and cooling job he wants. And that full-page photo of the Coolair bearing assembly really opened my eyes! No wonder these military and industrial engineers say the Coolair fan gives them the longest and quietest service.

"There's a complete section on "Home Cooling," too, but they tell me that's looking to the future because V-E Day hasn't changed the picture . . . we've still got to lick the Japs.

"Better send for this new Coolair catalog if you're going after priority-rated business. It'll be the biggest help you ever had on sales and installations."

Coolair TRADE MARK



IMPORTANT!

As this goes to press, WPB has just removed priority restrictions on ventilating fans, but priority-rated military, industrial and commercial orders still must have first call on our production! *Wise Coolair dealers will continue to sell fans only on priority ratings, the higher the better, so they can get reasonably prompt shipment on stock replacement and direct-to-customer orders.*

AMERICAN COOLAIR CORPORATION...Manufacturers

3604 MAYFLOWER STREET

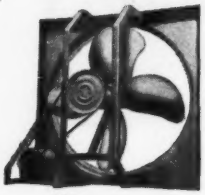
JACKSONVILLE 3, FLORIDA

For Home..

CHELSEA COOLERS

..for Industry!

..to fulfill TODAY'S big tasks!



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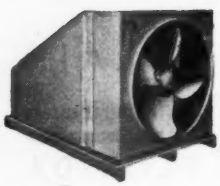
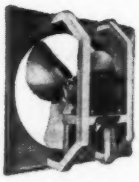


C

D



E

CHELSEA ventilating products are geared to the increased tempo of the South. The many designs—standardized for economy—offer ample diversity to meet every industrial and domestic need. Included are blowers, exhausters and ventilators for home, office, plants, and public buildings. All are ruggedly constructed for long, dependable service.

(A)—TYPE ED
GENERAL PURPOSE ATTIC FAN
(B)—TYPE AP
APARTMENT WINDOW VENTILATING FAN
(C)—TYPE EU
PACKAGE ATTIC FAN UNIT
(D)—TYPE MC
PEDESTAL COOLING FAN
(E)—TYPE BB
ALL-PURPOSE INDUSTRIAL FAN

For over 30 years CHELSEA industrial units have proven their ability to step-up production, lower costs and increase safety by removing hazardous fumes and providing adequate ventilation. In the home CHELSEA attic ventilators and kitchen exhausters make possible better, more enjoyable living. Inquiries are invited—descriptive literature on request.

CHELSEA

CHELSEA PRODUCTS

INCORPORATED
1206 GROVE STREET
IRVINGTON, NEW JERSEY

SOLVING POSTWAR PERSONNEL PROBLEMS WITH A PLANNING PROGRAM NOW

ALL OF US KNOW that when G. I. Joe and Joan come marching home they are going to bring a load of headaches with them for themselves and for the business world to which they will have to readjust.

We all know this and much is being written and said about it. But there are a few specific problems—and suggestions for their solution. By foreseeing some of these problems and taking active steps now to handle them, we can relieve ourselves and our service personnel of much of the grief which might come if we make the mistake of simply waiting to see what happens.

Getting the GOOD Men Back

"I have been in contact with my men and women in the service, naturally," confided Viola Brown, manager of Brandt Electric Co., of St. Louis, "and I find that many of the really *good* people are not coming back. The majority have developed new skills, new contacts and feel qualified for better or different work. But the mediocre ones—the ones I perhaps should have fired but didn't because I figured they were going in the army anyway—these are the ones who still plan to come back for a job."

To overcome this, Miss Brown has started a *selling* program now to get back the good men she wants. This firm, like most others, has numerous postwar plans for expansion and development. She takes good men into her confidence about these plans, writes them at regular intervals outlining the plans, shows each man how he will fit into them, points out the future opportunities. She also keeps them informed on new equipment, new products received, sending them the sales literature.

A "selling" campaign of a different type could go to the man you do not want. First of all you might try to determine just why a certain man is not as desirable as others. This determined, you could start, by mail, an educational program to increase that man's worth to you.

Was the fellow handicapped by lack of education? Then why not suggest that he contact the "Foxhole University," as it is called by the G. I. Joes? More than 800,000 service men and women, half of them overseas, are enrolled in this correspondence training school conducted by the U. S. War Department, from Madison, Wisconsin. A wide range of self teaching courses is offered from elementary grammar through advanced psychology and calculus. Thus encouraged, the man might make himself a better employee for you—or he might become interested in some other field. Anyway, Uncle Sam says you must hire him back if he wants it and is fit. Now is not too soon to take steps to take care of him.

Watch for Court Decisions

There are many points in the Selective Service Act which still are not clear.

Undoubtedly many of these issues will have to be decided by the courts —even General Hershey admits that. But we can keep them in mind now and watch for news of court decisions, WLB rulings, etc.

Just recently the WLB issued a ruling that the veteran must be rehired at the "level to which he would have been entitled if there had been no break in his service with the company." In other words the returning veteran is entitled to promotions accruing automatically during his absence.

What about your company policy in taking care of workers returning for jobs which have since been abolished? General Hershey has stated that the government will insist that every returning service man gets his job back regardless of union shop rules governing lay-offs and hire-backs. The unions are fighting this issue now.

The seniority angle is another problem still to be thrashed out. Also the meaning of the word "unreasonable" in regard to claims made by returning men.

Set Aside Reserve Funds

Returning veterans will need a period of adjustment to the business world. In the months or years these people have been away living a revolutionary new life in strange surroundings they will have drawn far from the electrical equipment field in their thinking. Others will be new recruits in the field, choosing this as their line of work when they return.

Meanwhile, dealers have built up a working schedule without them. In some cases women have been substituted for men. A terrific job of adjustment will be required by employer and employee.

M. B. Mathis, personnel manager for Union Electric Co., St. Louis, states that his company is beginning now to get up a reserve fund which can be used when these new problems face them. A certain amount is put aside each month so they can keep extra employees when service men return. In this way he can help returning service people to work back into the organization and full efficiency gradually, allowing them to adapt to business methods and firm practice, fitting them back into civilian life by degrees without embarrassment to them or to the firm.

The war has made us all increasingly conscious of the value of good personnel relations. But for the best results these matters should be under the supervision of one man.

The job of helping returning veterans to adjust is only one personnel problem. Another will be to keep

(Continued on page 76)

Store Planning for Dealers

STUDY of the problems confronting dealers who want to plan now for tomorrow's merchandising shows a great difference between down to earth, practical store planning and nebulous, blue sky treatment of the subject. It often takes an expert to recognize this difference between a workable plan and an impractical "arty" conception. That is why Landers, Frary & Clark, well known appliance manufacturers took the development of "Moderneering," the practical store planning program, to the front door of men and organizations whose business it is to know.

The result is the combined forward thinking of not one man, or any single group of men, but of leaders in the field of merchandising and design who represent outstanding products and materials essentially related to store modernization. We present here their conception of an electrical appliance and radio store designed specifically to sell more merchandise.

ACCELERATED market trends will sharpen competition when electrical appliances are again on the market, and it will be the dealer with the modern inviting store who will be getting the sales which surveys show are in the offing.

In the following paragraphs, the electrical appliance and radio dealer is shown how he can present his merchandise in mass display and at the same time individualize it so that the prospective purchaser can be sold on a specific model. Such items as design of floor patterns and use of special wall and ceiling materials tie in with the basic problem of planning a retail store for the main purpose of selling merchandise.

The flow of traffic from the street to the interior is accomplished through simple, but important, window and store front treatment. The consumer is led subconsciously into the store, fascinated by the display of appliances in the window. In the interior of the radio and appliance store cross-counter displays, appliance centers, and criss cross aisles, all play a psychological part in getting the customer from one group of merchandise to another.

The customer who enters the store in anticipation of purchasing a radio can easily be led to the left of the store where radios are situated or to the right where washers and ranges are displayed and with good salesmanship induced to double his purchase through the use of counter displays.

Front counter display suggests an orderly direction of consumer interest toward the right and left of the store and is designed to hold customer attention with the interesting displays of related items in order that the basic floor plan strategy can operate successfully.

The front counter display leads customer interest to specialized demonstration unit featuring home cleaning equipment where traffic is controlled beyond this point by means of an adjoining display counter . . . all of which is so designed and located as to expose major items and "atmosphere demonstration areas" at all times.

At the right side of the store, sawtooth planned background planes feature major appliances. The broken line is of greater interest, more stimulating, less fatiguing, and less inclined to streamline traffic past important sales areas. When majors are featured in this treatment attention can be more easily centered on the individual piece of merchandise allowing accentuated consideration of models so displayed and yet retaining the value of mass display when the whole wall is viewed from a distance.

Experience proved the principle of mass display effectiveness to be sound . . . the "manner of arrangement" within the mass is equally important. Individual zig-zag projections suggested are one means of isolating each model for close customer interest. At the same time each model remains a part of the mass display—simply as a matter of layout—without confusing the view from front to rear of store.

Actual demonstration arrangements of major appliances are planned at back of store (1) as traffic magnet that will draw customers through the store, (2) to set the stage for final decision and purchase after preliminary inspection of models, and (3) to stimulate additional purchases.

The interest of a customer having been aroused by the strategy of spotlighting individual models, merchandising flows naturally to demonstration unit under the guidance of the dealer's salesman. The prospect is en

couraged to operate the range or washer or ironer—to observe the small appliance under everyday conditions—thereby sensing possession even before the purchase is made.

Skillful demonstrations followed by on-the-floor trial at point of sale should be productive of volume results. Postwar credit and payment practices may take a form that will enable the dealer to aim at selling whole kitchens rather than individual appliances. In any event the principle of surrounding the customer with related merchandise is the basic foundation for multiple sales whether they are closed on the same visit or in the course of time.

The model kitchen must be right in arrangement, but it must never be forgotten that the customer remembers the location of doors and windows in her own kitchen space limitations which prevent her from seeing the dealer model kitchen in her home. However, her space can be arranged well for working and can have the same feeling, style, convenience and atmosphere of the retail demonstration area.

Atmosphere Demonstrations

The plan for the kitchen and laundry areas is based on consideration as "atmosphere demonstration units" instead of "model kitchen" or "model laundry." These atmosphere demonstrations are planned for practical sales work, not as show piece areas which might have a tendency to keep customers at a distance.

This strategy is apparent if the space alloted to cleaning equipment demonstration is studied. A good sized carpet or rug is secured to the floor at a point where store layout suggests a natural flow of traffic over the carpeted area. Stepping from the accustomed flooring on to this rug or carpet, the customer will inadvertently stop to reason why and the presence of vacuum cleaners, tank cleaners, and carpet sweepers, encourage actual on-the-spot demonstration. The upright window and blind section offers possibilities for demonstrating effectively the use and convenience of cleaning equipment accessories under simulated home conditions.

Neighboring displays of merchandise provide for intimate inspection of models and encourage purchases at point-of-demonstration.

The overall layout permits no "dead spots." If radios, record players and records are to be presented also as featured merchandise the flow of traffic is guided naturally to the left wall of store where these models invite inspection and demonstration.

The office, of course, is placed at the rear of the store apart from the general merchandising area itself. This should be a place of privacy where the dealer can conduct his store business, keep his files and records, meet suppliers salesmen, discuss matters of importance with his staff.

At the rear of the store space is alloted for an air conditioning unit. For a store of this size, a "packaged unit" makes a logical choice since it does not require a system of ducts for air distribution.

The service department of the radio and appliance store is important not only as a direct profit producer, but because it is here that the dealer keeps his customers happy with the goods they buy, guaranteeing quality through trained installation and maintenance service. This too, should be placed at the rear of the store but not isolated from the general layout. Customers should be able to find it easily and in so doing they will be exposed to the merchandising strategy of the radio and appliance store arrangement.

Recommended Store Front

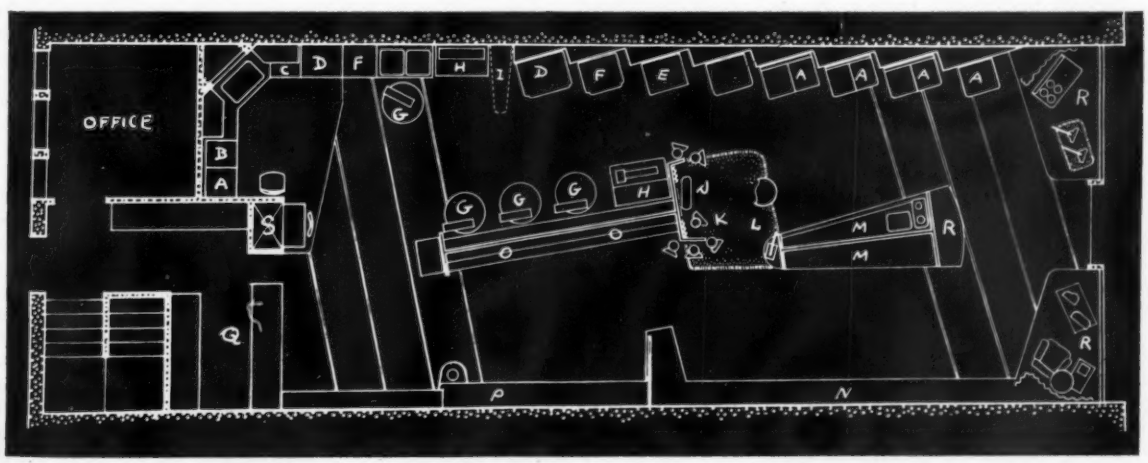
A general description of materials recommended for this electrical appliance and radio store front will help to make the designed drawings more of a reality for the dealer.

Specifications such as an architect would write in his plans might confuse the issue at this point of Modernneering and, therefore, this material is confined to an enumeration of the materials recommended and identified in this proposed front. The dealer's architect will provide him with complete architectural specifications relating directly to his store front requirements.

The facing on the pilasters and facia is Pittsburgh's Ivory Carrara polished finish. The bulkhead or that portion directly under the sill of the plate glass display window is Pittsburgh's Forest Green Carrara. Before applying the Carrara structural glass a background must be prepared by the general contractor. This background will be made of plaster "smooth finish" applied on steel lathe.

The awning bar is Pittsburgh's Pitteo concealed awning assembly. The glass holding members are Pitteo Deluxe sash with Pitteo small sill members, which mitres at the corners and extends up the inside of both pilasters, dieing into the awning box.

At the top of the Carrara facia a



Suggested layout for an electrical appliance and radio store, making use of scientific principles of merchandising. The various features of the store are identified by the letters as follows: (A) ranges; (B) dishwashers; (C) hot water heaters; (D) refrigerators; (E) home freezers; (F) automatic washers; (G) wringer washers; (H) ironers; (I) hand irons; (J) tank vacuum cleaners; (K) floor vacuum cleaners; (L) floor polishers; (M) small appliances; (N) floor radios; (O) table radios; (P) records; (Q) service; (R) feature displays; and (S) air conditioner.

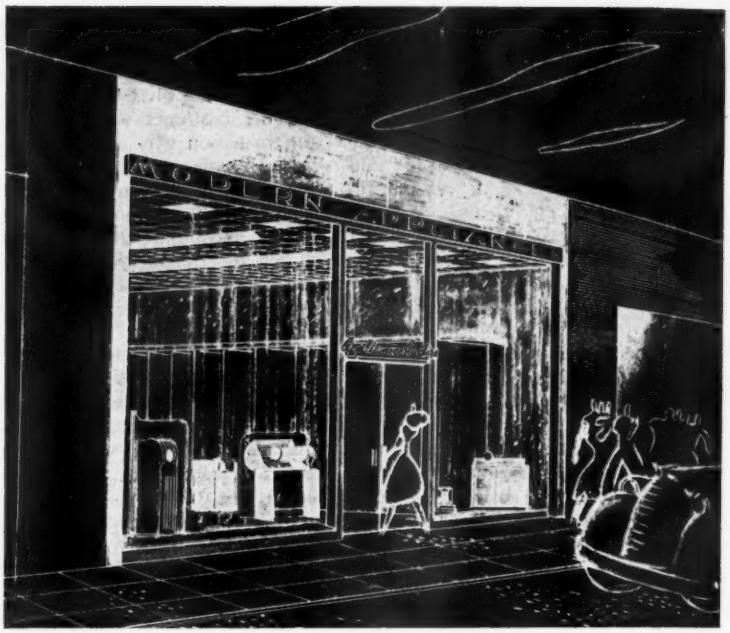
metal cornice member is used so that there will be no leakage at the top of the structural glass. A small metal enclosure member is also used at both right and left side of Carrara facia, running from sidewalk level to top.

Door jambs are to be approximately 6 to 8 inches deep—the face from 3½ to 4 inches—and are to be metal covered. The entire door jamb assembly is to be covered with metal, corresponding with the store front metal.

The doors are regular Pittsburgh's ¾ inch thick Herculite Doors with Lucite, metal push and pull bars. Locks for these doors can be placed either in the top and bottom channel or in the bottom channel alone.

The sign "Modern Appliances" has been placed directly above the concealed awning bar. The letters of the sign are made of Pittsburgh Carrara, wine color, laminated to the black Carrara background.

The sign "Appliance—Radio" which sets directly above the impost of the door jamb assembly can either be sandblasted in the clear plate glass transom and painted, or a strip of Carrara can be placed here with colored Carrara letters laminated on the Carrara Strip.



Suggested front for a store devoted entirely to the sale of electrical appliances. Almost entirely of glass, this front makes the entire sales floor virtually a window display. The facings on the pilasters and facia are Pittsburgh Ivory Carrara polished finish. The sign "Modern Appliances" has been placed directly above the concealed awning bar. The letters are wine colored and laminated to the black Carrara background. The sign directly over the doors can be sandblasted in the clear plate glass and painted or can be colored letters on a Carrara strip.

Special Treatment for Walls and Ceilings

Modern treatment of walls and ceilings provides a background for proper display of merchandise, creates an atmosphere that is reflected in the increased efficiency of the electric appliance and radio store dealer's entire store operation. It confirms the promise of moderneered store front by establishing a permanent continuity to the momentum of merchandising strategy from the sign and front, through to the cash register. It suggests an alert, up-to-date management and bids heavily for call-back patronage.

More than this, with the structural advantages of Celotex Standard Building Board, Tile and Plank it is possible to indulge in a Moderneered Interior that abandons static straight-wall arrangement in favor of a broken line treatment to emphasize featured displays and to help guide traffic penetration and movement within the store.

The interior of this electrical appliance and radio store is constructed with Celotex Interior Finish materials which have tough cane fibres fabricated into strong, rigid boards possessing exceptional qualities of durability and insulation—are dry-rot and termite proof, hold no attractions for rodents or vermin.

Ceiling Tile Board recommended for this interior is 16 inches by 16 inches and one-half inch thick—the larger of two available sizes. Interlocking joints conceal nailed construction and present an overall finished flat white surface that can be painted if desired.

If radio demonstration and record playing create a noise conflict that reflects upon merchandising efficiency, it is possible to control this distraction by insulating the ceiling with acoustical tile. Acoustical insulation or listening booths for record playing would also contribute a great deal to the efficiency of this department.

The paneled projections along the right hand wall are of half-inch thick Celotex Standard Building Board. Four feet widths are applied to simple wood frame construction with reinforcing upright at back. The edges are finished with picture moulding of contrasting color presenting an effectively framed background panel for individualized major display. The rear wall is faced with Celotex Board in standard widths. Square edges may be finished with recessed moulding—the face square with surface of board. Mouldings or battons may be applied over joints, or edges can be beveled.

The left wall emphasizes Radio and Record Department by use of Celotex Finished Plank, creating an impression of extra height when used in vertical application. When available in Avidaire Wood Finish, background can stimulate birds-eye maple and provide a proper merchandising atmosphere that will highlight radio display. Generally available in prepainted white, Celotex Standard Board may be painted a wood brown to harmonize with cabinets on display. Edges of planking are beveled and interlocking easily set-up to present a pleasing finished appearance.

Store Lighting

The value of modern lighting is notably illustrated in specialty store selling, inherent in the electrical appliance and radio retailing business. In the accompanying plan of illumination, light sells both by attracting prospective customers from the street and by dramatizing the merchandise for them once they enter the premise.

The specific problem here was to employ light to highlight traffic counter merchandise, which must practically sell itself, and to dramatize the store-long display of major appliances. The latter objective is accomplished by bathing the ranges and refrigerators

in pleasing diffused light. This illumination originates in the overhead fluorescent lighting fixtures, which in this instance are arranged in two continuous rows. This general, illumination likewise benefits the traffic counter merchandise. The necessary dramatization of percolators, toasters, and kindred items is attained by directing spotlights, recessed in the ceiling on them.

Changing display requirements are particularly well met by the readily adjustable spotlight arrangement. Conveniently spaced outlets and long flexible leads to each spotlight permit their being moved to any section of the store.

The narrowness of this store's window dictated full employment of light to stop passersby. This is achieved by combining bright, but pleasing overhead illumination and by specifically spotlighting the merchandise.

The general interior lighting system uses 14 Sylvania Fluorescent Fixtures Model C-115, each equipped with two 40-watt lamps behind frosted glass diffusing panels. Fixtures measure 49 inches in length by 13 inches in width, and are mounted in two continuous rows spaced 10 feet apart. End of first fixture is located 5½ feet back from show window.

Individual fixtures are installed in office and over stair landings. Spots are provided with long leads to permit adjustment, and are connected to conventional outlets recessed into the ceiling in a space equivalent to one Celotex tile.

Choosing Floor Coverings

Linoleum can be employed to heighten the merchandising strategy of store layout by a planned selection of patterns and colors that will help to guide consumer traffic and to lend an added prominence to merchandising areas. Colors should be chosen to harmonize with each other as well as with fixtures, walls, and any other prominent areas. It is possible, also, to accent featured displays by a choice of color and pattern that will emphasize these items of merchandise.

Floor patterns and colors should be subordinated to the display strategy of your store interior. Their purpose is to give prominence to merchandising areas and to encourage traffic movement—never to draw attention to the floor covering itself at the expense of merchandise on display.

Nairn Linoleum chosen for underfoot resiliency, long wear, pleasing appearance and to expedite merchandising strategy has additional uses illustrated here for counter-tops, table coverings, working surfaces. This offers the extra advantage of complete harmony between floors and fixtures.

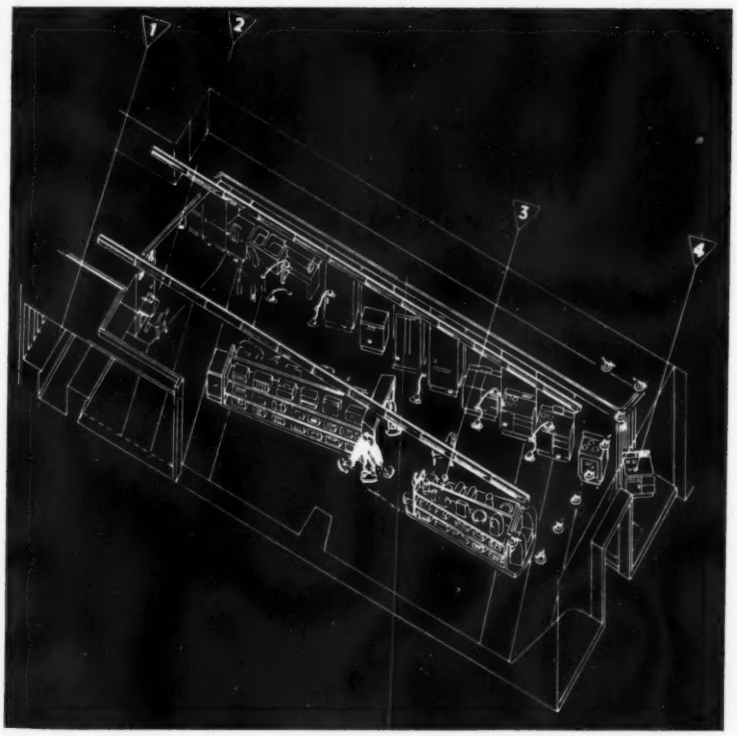
Relating these principles inherent to this electrical appliance and radio store, it is suggested that this floor area be covered wall-to-wall because of its long and comparatively narrow proportions. This together with the "feature strip" technique that is indicated will help to "widen" the interior in its overall concept.

These feature strips, one inch to three inches wide, are planned to run at the angle suggested by the sawtooth panel projections which feature major appliances along the right wall. The effect of "widening" the store is obvious. The strategy of directing attention to each model displayed is basic in its value to this merchandising layout by suggesting to interested consumers that they pause and inspect the major appliances on display, thus directing traffic interest between the arrangement of small electrical appliances and these majors along the right hand wall, opposite.

This strategy is active, also, at left of store interior, where interest is guided from the arrangement of small appliances and table radios to floor model cabinets along the left wall. By carrying this same plan throughout the store the complete interior is developed into an efficient merchandising area.

A break in this feature strip technique highlights consumer interests in the demonstration area for major appliances at rear of store where an overall marbleized pattern in complimentary color is used. This same pattern is also employed on the floors in the windows facing the street.

Linoleum is suggested also for top covering of counters and display fixtures, using a color complimentary to the harmony of the store interior. This provides a long wearing surface that is not easily scratched or marred.



Modern lighting is one of the essentials in the properly designed specialty appliance store. In the plan shown above, light sells both by attracting prospective customers from the street and by dramatizing the merchandise for them once they enter the premise. The rows of refrigerators and ranges are bathed in pleasing diffused light which originates from two continuous rows of fluorescent fixtures. Display requirements are met by readily adjustable spotlights. They are provided with long leads to permit adjustment and are connected to conventional outlets recessed into the ceiling in a space equivalent to one Celotex tile.

Fluorescents 96 Inches Long

Postwar fluorescents will be long and slender—42 and 64 inches long, with a ¾-inch diameter. Later, lamps 72 and 96 inches long may be manufactured.

Guns of Glass Win an Old War

IN THE LONG history of mankind, the oldest war on record is the endless fight against disease, a campaign in which casualty lists and economic costs always have outweighed the losses from any man-made war.

Today, in plants all over America, production executives have discovered the economic as well as the humanitarian advantages of joining in the war against air-borne infection. They are fighting disease, preventing time-losses, with a new weapon, an amazing ultraviolet lamp already proven effective in scores of infirmaries, hospitals and schools, new germicidal lamps that literally have become guns of glass.

In the pictures that border these pages is a new germicidal installation in the plant and offices of the Fulton Foundry and Machine Company, Inc., in Cleveland. A. C. Denison, president of a Meehanite iron foundry and his general superintendent, William "Scotty" Manville, are justly proud of their germicidal lamps and fixtures, newly installed to protect their workers. Denison is a metallurgical engineer and Manville a working superintendent in a gigantic foundry making castings up to twenty tons.

It is a very personal problem affecting workers who, in a very real sense, are members of a fighting unit in the war effort. Every worker, every visitor who enters or leaves the offices of the company is protected against air-borne infection by germicidal lamps strategically placed above the doors. For the size of the plant areas, the office is small and the workers are closely associated for long periods at a time. Atop the partitions that separate executive from detail offices are two big Disinfectaire fixtures that sterilize air in circulation, help to reduce the ever-present danger of cross-infection.

In both of the great buildings that comprise Fulton foundries, giant moulds and piles of newly formed products prevent too-great congestion among the workers. Locker and washrooms, however, often are crowded. At Fulton, Mr. Denison has protected men and women workers by installing Disinfectaire equipment in all washrooms. Six fixtures equipped with germicidal lamps reduce cross-infection in the big locker room and four other groups reduce the bacteria-count in the washrooms. All locker and washrooms are modern.

Workers' clothing is dried and sterlized in modern driers and worker cleanliness is assured by modern fountains like the one shown in the accompanying illustration. Locker

room floors are sprayed with an effective disinfectant, a spray that leaves a pleasant after-odor. Those preventive and protective measures, aided by a low accident rate, have made it unnecessary for Fulton Foundries to maintain a plant clinic or infirmary. From a group of doctors, in the immediate neighborhood, complete medical service and surgical aid are always available to all Fulton Foundry employees.

Workers as well as executives at Fulton are enthusiastic in their approval and pleased by the promise of their new "guns of glass" installation. They are confident that their rate of infection, in the months and years to come, can be controlled and their morale, already high, has been materially increased. Mr. Denison and his associates feel that germicidal lamps provide a unique means of disinfecting air, give them a practical way to use ultraviolet energy to minimize the danger from air-borne bacteria.

It may be that Denison and his associates at Fulton Foundry have more than ordinary foresight, may be years ahead of other similar plant operators, in their protection of employees. Certainly, these men were prompt in their adoption of guns of glass in their war against air-borne infection. Restricted by war, the germicidal lamps and fixtures they installed had been back on the market, on a quota basis, for only a few brief weeks.

But, whether Fulton is typical of all foundries or Denison characteristic of all plant operators, has little bearing on the established fact that new germicidal tools and techniques have created a great new market. Although, during the war, the promotion of germicidal lamps and fixtures has been greatly restricted, still hospital demand has doubled every year for four years. A one-hundred per cent increase in any market is remarkable, but these gains were made under rigid restrictions, at a time when lamps and fixtures could be allocated only to holders of high priorities.

The photographs on these pages show numerous applications of ultra-violet germicidal lamps in a leading foundry and machine shop. The lamps are placed so as to protect employees and visitors at every point in the plant. On the page at the left is a photograph showing one of the ceiling units in the locker rooms. On this page are photos of units at entrances, in offices, and in the special sterilyzer for drying clothing.

Now that germicidal lamps and fixtures are available, plants like Fulton Foundry represent no more than a single major section of the potential market. Utility and electrical experts inform us that American schools offer a potential volume of germicidal business equivalent to equipping every school room with new filament lighting, a dollar volume one-fifth as great as that of relighting them with new fluorescent fixtures and lamps.

The Council of Physical Theraphy of the American Medical Association has formally approved a variety of fixtures for the hospital use of germicidal lamps. Here, again, market estimates say that the volume of potential business for germicidal installations can equal the original cost of all the lighting installed in hospitals from coast to coast.

New germicidal lamps, which produce ultraviolet energy as a potent aid in control of air-borne bacteria offer utilities, contractors, wholesalers and dealers a great new opportunity for vital public health service to the plants, theaters, schools, hospitals, stores, offices and homes in their communities. The need is great and the market major in both size and potential profit for all of the organizations trained and equipped to install and service this new safeguard. For use in nursery, kitchen and bath, the germicidal lamp already has captured

(*Continued on page 76*)

Service Department Expansion Planned for Postwar Years

LESSONS learned during the war will make a foundation for the postwar business of W. E. Davis, owner of the Davis Repair Service, Baton Rouge, La., who is planning a complete new building with separate repair departments for washing machines, radios, electric motors, and refrigerators.

Each repair job handled now becomes a record from which a postwar list of prospects will be compiled. Every repair job is considered a postwar prospect for a refrigerator, washing machine, radio, or other electric appliance.

According to Mr. Davis, he will always do more machine and repair work because of the lessons learned during the war and the results obtained by installing the proper machinery to do a good job.

Equipment used in the Davis shop is complete. He has an acetylene welding outfit which he uses not only for welding but for building up worn shafts, occasional flame cutting and the fabrication of parts unobtainable from the manufacturer.

He has an 11-inch swing, quick-change lathe which is used for making new motor shafts, turning down rebuilt shafts to size, making odd size bushings, and many other parts. Some washing machine parts are made of case-hardened steel, and shafts made of this hard material can be finished for use by grinding with a toolpost grinder in the lathe.

W. E. Davis, owner, Davis Repair Service, Baton Rouge, La., at one of his lathes, where they make and refinish motor shafts and other parts.

Don Ogden Davis, one-year-old son of W. E. Davis, owner of Davis Repair Service, who is cutting his teeth on motor leads and iron cords. Rack shows a few of the finished motor jobs ready to go back to customers.

The Davis Shop has perfected a new type seal for washing machines which stops water from leaking around the agitator shaft into the transmission, where it does damage by thinning the oil.

Two large power-driven drill presses are part of the Davis equipment, each taking up to three-quarter-inch drills. Two of these machines are needed because a smaller number of factory parts can be made to fit a larger number of washing machines if proper drilling equipment is available.

Owners of washing machines need more education as to their use, according to Mr. Davis, who cites use of the water line instructions that are widely violated either through lack of knowledge or carelessness.

"Many machines are damaged through water in the gearcases because owners fill the machines to the marked water line before they put in the clothes," Mr. Davis said. "After they put the clothes in, the water rises two inches or more. Others think the instruction to fill only to water line is a scheme of the manufacturer to keep the machine from being overloaded."

Most of the appliance motors coming into the Davis shop with worn bearings and scored shafts are due to lack of oil or use of household oil. To provide a better service for his customers, Mr. Davis provides an oiling and inspection service after repairs have been completed. This is available also on rebuilt machines that he sells.

Exterior Davis Repair Service, Baton Rouge, La.

He sells this service at the time he sells the repair job, pointing out that the repair would not have been necessary if the machine had been inspected and oiled at the right time.

Repair jobs should be complete and the repairman should not allow himself to be induced into making a small temporary repair when he knows the machine will break down again in a few weeks. Invariably, Mr. Davis said, the customer will say that she paid to have the machine fixed and now it's broken again!

Mr. Davis has spray painting equipment and completely repaints his washing machine repair jobs, motor jobs, and all others where the original finish was paint.

In the radio department, Mr. Davis has been fortunate in obtaining the services of a returned soldier who received radio training in the army. On a part-time basis, this man has been successful in reducing the large number of repair jobs on hand.

Other equipment used in repair work includes two flexible motor driven shafts used for sanding and cleaning preparatory to painting.

A bearing press and an air compressor are two indispensable items of equipment.

Mr. Davis recently was able to buy 75 used washing machines which are being completely overhauled and repainted. A customer waiting list has absorbed the entire lot and they are being delivered as quickly as finished.

Demand for washing machines has been accelerated by the inability of the laundries to handle the volume as well as the shortage of maids and domestic help in the homes, according to Mr. Davis.

But it is a blessing from the standpoint of the appliance dealer, Mr. Davis thinks, because after a washing machine has once been used, it is almost certain that the home will never be without one. All these users are the best type of prospects for new equipment and many of them will be in the mood to buy a complete laundry when the equipment becomes available. There are already many inquiries about complete home laundries including large power driers.

Mr. Davis expects to build a new building after the war for his appliance business. The front will be devoted to sales of washing machines, refrigerators, fans and ironers, and in the rear he will have separate and complete repair shops for washing machines, refrigerators, and radios, each with its own peculiar tools and equipment, and complete within itself. This is the way toward efficiency and production, Mr. Davis thinks, as few of the tools and equipment are interchangeable.

Reboring an agitator in one of two Delta drill presses in use in the Davis Repair Service Shop, Baton Rouge, La.

Old Customers First With This Dealer

Taking care of regular customers is objective No. 1 of T. J. Herrin, proprietor of Radio Service Co., Hattiesburg, Miss. His is a busy war town with an army camp only 12 miles away. That has made for a large floating population and more business than he could take care of with the help he could get.

So he handles the situation this way: his old established customers come first. He even continues to give them a pick-up and delivery service on console models. As for other business, he takes all he can handle, telling the customer he will get it out as soon as he can, and lets the rest go. He can't give any promise of delivery date on this overage, because he doesn't know just how much business he will have from his regular customers. Rather he takes it on an "if and when" basis.

Here is why Mr. Herrin follows this policy. He has been in business since 1935, and it was these regular customers who kept him up when he needed work. Now he proposes to stick by them when they need service.

It has been hard to follow this policy, but Herrin has stuck by it faithfully, even putting advertisements in the paper occasionally to the effect he could take no new business for a week.

Manpower is very scarce in Hattiesburg, so Mr. Herrin tried out girls, but they didn't prove satisfactory as radio technicians. He uses schoolboys and any extra help he can get from war workers. And he works night and day, himself.

Mr. Herrin didn't sell radios prior to the war but he certainly plans to do so after the war. He says every home will want a new radio and he expects his first sales to be to his old service customers. That is another reason he is sticking to them during the war.

T. J. Herrin's modern radio service shop in Hattiesburg, Miss.

Fluorescent Fixtures --- Germicidal Lamps Features of School Lighting Job

ONE OF THE FIRST school lighting jobs in the South employing fluorescent fixtures throughout and germicidal lamps in the elementary grades was recently completed at Shades-Cahaba High School, in Birmingham, Ala.

The "all out" modernization program included the installation of venetian blinds, in order to control the neutral light, and redecorating the walls and ceilings for the best reflecting values.

The old lighting system, not much beyond the drop cord era, provided only 2 to 4 foot-candles of illumination, this being unevenly distributed. The walls were dark and dirty and the curtains torn and inadequate.

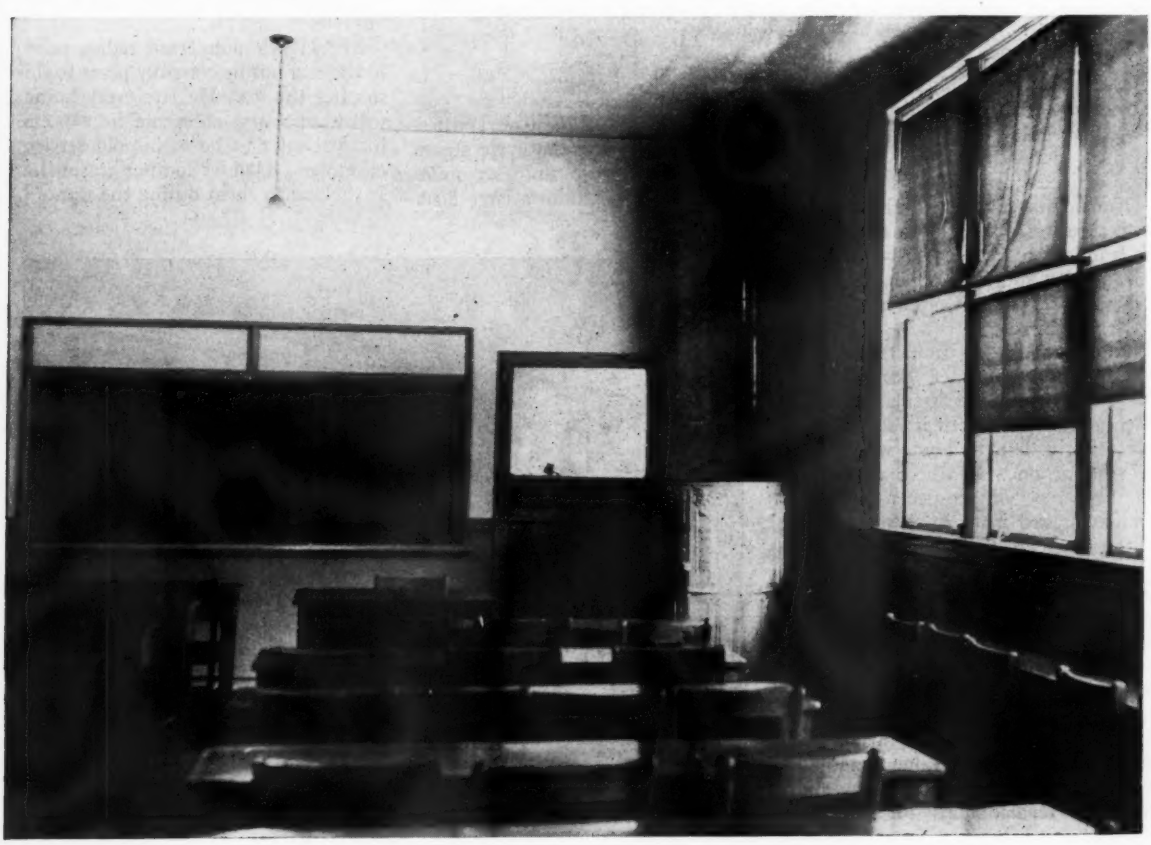
The new fluorescent system provides 30 foot-candles or more of illumination, this being evenly distributed throughout the rooms. Fluorescent fixtures were chosen for the job in consideration of all the factors involved. Each room has some 600 to 700 square feet of floor surface with window exposures on one side. The fixtures used are of 2-lamp design with louvred bottoms and plastic side panels. The fixture units are mounted end to end, there being two rows per room with six or seven units per row, depending on the size of the rooms. Each unit is equipped with no-blink starter switches and 48-inch, 40-watt white fluorescent lamps.

This is one of the drab school rooms of the Shades-Cahaba High School, in Birmingham, before modernization of lighting and other features shown on the opposite page.

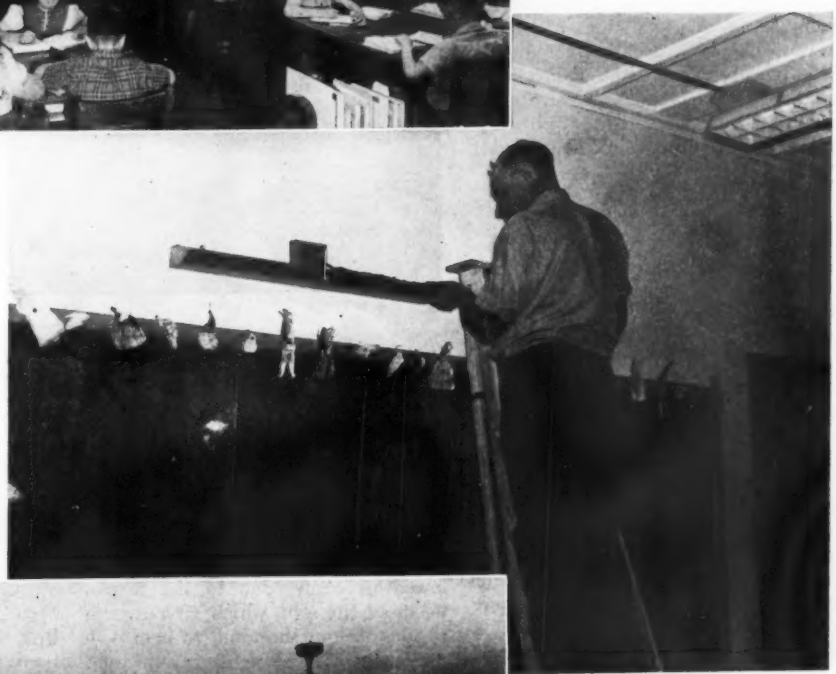
Exciting most interest among patrons, teachers and pupils of the school was the installation of the germicidal lamps. The installation in each room consists of four Uviarc lamps mounted in fixtures placed on the side walls about seven feet above the floor. These 30-watt ultraviolet lamps provide a disinfection of the atmosphere of the rooms equivalent to 60 changes of air per hour, as compared with only seven changes per hour in the average room in winter time.

Experiments have shown that the incidence of disease among children in rooms protected by germicidal units is only 12.6 per cent as compared with 51.8 per cent in rooms without this radiation.

Fluorescent lighting in each room is controlled by two switches so that



This photograph showing typical school room in the Shades-Cahaba High School, Birmingham, Alabama, after modernization of lighting and other features.



Germicidal lamps installed on walls just above blackboards are expected to reduce absences resulting from respiratory illness. Other improvements included a new, modern heating system and venetian blinds.

A total of 380 fluorescent fixtures, each including two 40-watt lamps, were installed in the school. These provided 30 foot-candles or more in 25 classrooms and a library. The building was rewired entirely in order to make certain that operation of the new lighting would be satisfactory.

the inside row may be burned when the row nearest the windows is not needed. A separate switch is also provided for the germicidal units in each room. Convenience outlets were placed in the rooms to take care of such visual aids to education as motion pictures and sound equipment.

In redecorating the rooms to provide the best seeing conditions, ceilings in all rooms were painted a flat white with approximately 85 per cent reflecting value. The side walls and blinds were finished in a light pastel green with an initial reflector factor of 55 per cent. The door and window trim is slightly darker semi-gloss green. These colors provide restful and efficient conditions for schoolroom seeing.

Fluorescent lighting is provided for all 25 classrooms and the library, there being a total of 330 fixtures with two 40-watt lamps to each. In addition two "lab" rooms and the auditorium, where seeing demands are more general in nature, were lighted with 20 semi-indirect units of the filament type. Corridor lighting was supplemented by installing some of the better units taken from the classrooms.

The building was re-wired throughout in order to insure proper capacity and regulated voltage for satisfactory operating conditions. Use of continuous runs of fluorescent fixtures minimized the wiring problem to some extent, the wiring being run along as an integral part of the fixtures themselves. This made a minimum number of ceiling outlets necessary, probably not more than one-third as many as in previous types of lighting.

The wiring system is of 3-wire, 115-230-volt secondary distribution type, fed from a 2,300-volt primary. There are four 24-circuit and two 16-circuit distribution panels with an entrance capacity of 600 amperes.

Result of Community Project

How this school got an up-to-the-minute lighting system, also a new stoker-fed steam heating system is a story in itself. The Board of Education of Jefferson County was willing to help, but like most school boards in the South was short of funds. So patrons of the school pitched in and raised $10,400 to apply on the improvements, this being at the rate of more than $10 for each of the 1,000 pupils in the school. Under the agreement, the patrons paid for the lighting fixtures, the stoker and the venetian blinds. The county, using its own maintenance forces, furnished and installed the wiring and the heating plant (excepting the stoker). The county also bore the expense of redecorating the rooms.

The lighting installation was engineered by the Birmingham Electric Company, and L. J. Campbell, sales representative of the incandescent lamp department of General Electric Company. As a patron of the school, Mr. Campbell took a personal interest in the job and supervised its installation. It is now being used as a model for similar installations in other schools.

Design a Sign that Helps Sell

"ATTRACTION No. 1 in our new place of business is a neon electric sign out front," reports L. E. Lacey, of Lacey Electric Company, Birmingham. "We moved a few doors down the street, but customers followed us easily, due to the prominence of the sign, which serves nicely to identify our shop and to help people find us. It is mighty easy to walk down the street looking for a place and walk right by it unless there is an identifying sign out front.

"Besides identifying our place, the sign is an effective advertising medium, both day and night—in fact, the most effective point-of-sale reminder that one can have. We use newspaper and other types of advertising featuring electrical wiring, fixtures and appliance repairs and installation, but the sign supports this advertising by telling the public where they can buy, thus backing up the why in other types of advertising. Numerous surveys have shown the value of signs in directing people to places where wanted merchandise or services could be purchased.

"In our own case we selected a design for a sign which is to be used as a trademark in all our advertising. A cut of it will appear in the telephone classified directory and also on our stationery. It gives our telephone number and describes our principal services. In fact it is somewhat more inclusive in content than would have been necessary except for the fact that we wanted to use it for trademark purposes as well.

"Where an electrical dealer is building a new store after the war, he may well have the sign designed as an integral part of the architectural treatment of the building itself. In any event the sign should be selected carefully to harmonize with the building structure as well as with surroundings. The sign should be of such design and so mounted that it will not be obstructed by other signs or buildings in the same block. If it can be distinctive yet dignified, so much the better.

"The copy for the sign needs to be chosen carefully. In some cases of well established businesses the firm name for identification purposes is sufficient. In others, a slogan or message will prove to be a selling aid.

(Continued on page 76)

Don't Lose Your GRIP!

Safety Tip: **When you're using a wrench on a "frozen" joint a good grip is a "must". Avoid accidents and wrap the handle of your wrench with U. S. Security Friction Tape. You'll work more safely...and faster and easier, too. There's no end to the ways Security Tape can help you—in plant, shop or home.**

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Serving Through Science

Wave Windings for A-C Motors

Chapter 1—An Introduction to Wave Windings and the New Simplified Connection Diagram.

By A. C. Roe*

THIS is the first chapter of a comprehensive series on wave windings for a-c motors. The author has discovered a new method of approach with certain simple basic features that will greatly simplify this subject for thousands of motor rewinders.

The series will provide complete coverage of such windings for both rotors and stators and will include a set of simple connecting diagrams and tables for shop use.

THE WAVE WINDINGS used in alternating current motors for rotors such as shown in Fig. 1, or for stators, are of a different type than the wave windings used in direct current armatures, the major difference being that for each phase the a-c wave winding has two separate sections, and each section will have two leads. Thus, each phase winding will have four leads, and a three-phase a-c wave winding will have six sections and twelve leads.

Another complication on a-c wave winding is the lack of a commutator, as shown in Fig. 1, which necessitates connecting up the coil ends after all the coils are installed. The winding shown in Fig. 1 has 90 slots, 180 single coils, resulting in 360 coil leads to be connected in proper relation for pitch, phase, etc.

The connecting or winding diagrams employed by the motor manufacturers for a-c wave windings are complicated in most cases, with many detailed lines drawn in. The mass of lines and details all combine to make the resultant diagram a large cumbersome drawing. This mass of detail is the main reason that no attempt has ever been made to publish complete connecting diagrams and coil grouping charts as has been done in past issues of ELECTRICAL SOUTH for a-c lap windings.

Simplified Approach Found

Since the a-c wave windings are increasing in use, both in rotor and stator windings, there is a need for the motor repair man to have clear, simple, and compact data on a-c wave windings. A thorough study and investigation of the subject was made by the author, which resulted in a new method of approach and the discovery of a simple basic feature of the a-c wave winding that eliminates all the disadvantages referred to above.

This new series of articles will be dedicated to the complete coverage of a-c wave windings and connecting diagrams, and will include a simple set of connecting diagrams for general repair shop use.

Slots Per Pole Per Phase

The diagrams that will be used in this series of articles are based on one major feature of a-c motor wave windings, and that is: for the same number of "SLOTS - PER - POLE - PER PHASE," the coil pitch on the core, as well as the lead pitch, is the same *regardless of the number of poles.* Therefore, one simple, small connecting diagram can be made to cover all slot and pole combinations which, when divided by the total of pole-phase groups, results in the same number of "slots per pole per phase."

Before going into the details of the new type connecting diagrams, a brief review of the present standard diagram and a corresponding simple diagram will help the reader obtain a clear understanding of what this series will do towards eliminating the complications of the a-c wave winding diagram.

In Fig. 1 is shown an a-c wave wound rotor with 90 slots, four conductors per slot, or 180 single coils, resulting in 360 leads to be connected correctly. The connecting dia-

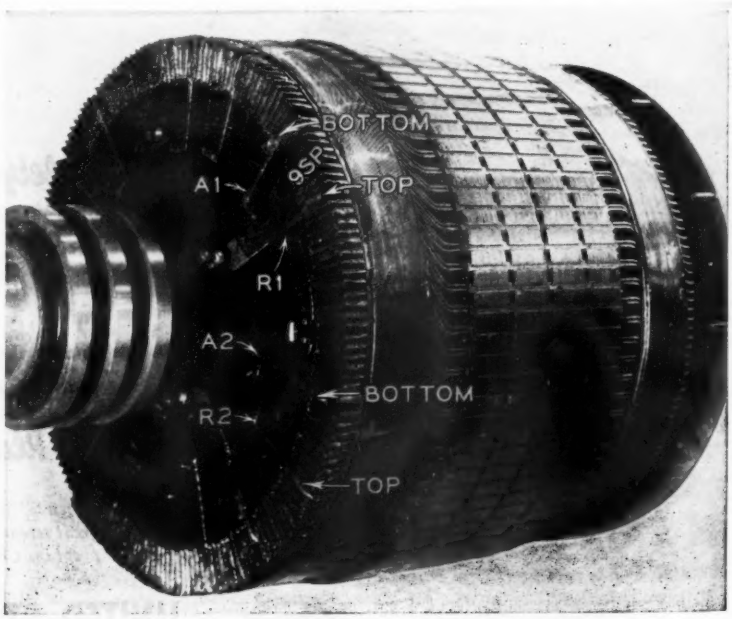

Fig. 1. A typical a-c wound rotor with a wave winding. This winding has 4 conductors per slot, 5 slots per pole per phase. There are 90 slots aand 6 poles. Both back and front pitch are 1 + 16. The short pitch is 1 + 15. Top and bottom coil ends are indicated. The markings "A1," "R1," etc., can be compared with those of Figures 2, 3 and 4.

*Mr. Roe is a motor engineer associated with Westinghouse Electric Corp., East Pittsburgh, Pa.

Anita Clegett, Supt. of Nurses, Jackson, Miss.
Turner A. Farrow, Farmer, Oshkosh, Wisconsin
C. R. Dowdey, Elevator Mech., Birmingham, Ala.
Eva Laborde, Housewife, New Orleans, La.
C. S. McDonald, Police Officer, Alexandria, Va.
L. G. Ray, Dentist, Madisonville, Kentucky
Raymond F. Porch, Painter, Pittsburgh, Penna.
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Ruth Dowell, School Teacher, McKinney, Texas
These people are your partners
They come from all over the country and many walks of life. Directly or indirectly, they are business partners of yours.
Directly, if you own stock in an electric company and perhaps as these nine people do. They were picked at random from several million shareholders in America's business-managed electric companies.
Indirectly, if you have a savings account or life insurance policy, like 67,000,000 other Americans. When you make a deposit or pay a premium, the money is invested—put to work for you.
Banks and insurance companies invest your money carefully, because put a lot of it into light and power companies. Because these companies have proved their soundness to investors.
So the electric industry is a privately owned industry in America. You and almost every other adult American are partners in it. And whatever helps the industry helps you.
• Hear NELSON EDDY in "THE ELECTRIC HOUR," with Robert Armbruster's Orchestra. NOW every Sunday afternoon, 4:30, EWT, CBS Network.
167 ELECTRIC LIGHT AND POWER COMPANIES
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Do these folks look like tycoons?

LOOK over the faces in the advertisement above. Typical, hard-working Americans. They represent several million similar stockholders in America's *business*-managed electric light and power companies.

They give eloquent answer to the worn-out wheeze that all such companies are owned by a few rich men!

Readers of national magazines will see this advertisement during June. It is another in the cooperative series reporting the record—past and present—of America's *tax-paying, self-supporting* electric companies.

Other advertisements appear regularly in farm publications and newspapers. And back of all this is the popular radio program—"The Electric Hour," featuring Nelson Eddy—every Sunday afternoon (4:30, EWT) over CBS.

Be sure to listen to "The Electric Hour" regularly. Watch for the advertisements as they appear. Discuss them with your friends. Remember, this whole program is designed to do a job for *your industry—your company—and YOU.*

167 ELECTRIC LIGHT AND POWER COMPANIES*

SELF-SUPPORTING, TAX-PAYING BUSINESSES

**Names on request from this magazine.*

gram used for this type of winding would be of the type shown in Fig. 2, which shows the conventional type of connecting diagram used for an 8-pole, three-phase, 72 slot, 3 slots per pole per phase, left hand, leads on bottom, counter clockwise (CCW) series star winding with a back and front pitch of 1 and 10.

Grouped Phase Connections

In Fig. 2, note the mass of detailed lines to follow through and check. Close examination will reveal that the leads for each phase are grouped close together, also that the slots to which the lead coils go are in three close groups as slots 1 and 71, 64 and 62, 53 and 55, for the A-phase or A1-R1-A2-R2 leads.

This brings us to the second basic principle of the new connecting diagrams. On any true wave winding, especially on rotor windings spaced 120 degrees apart, all the lead connections for each phase are grouped together as shown in Fig 1, where the A1-R1-A2-R2 leads are marked, and in Fig. 2 where the A, B, and C phase leads can be seen spaced 120 mechanical degrees apart.

In Fig. 2, the A phase group consists of four leads as two bottom leads marked A1 and A2, and then two top leads marked R1 and R2. Between the A1 and R1 leads are five connections marked "SP1," which indicates the short pitch area, where the end of the four coil series drops back one slot on the front pitch to continue the phase section. Note that one bottom lead from slot 72 connects

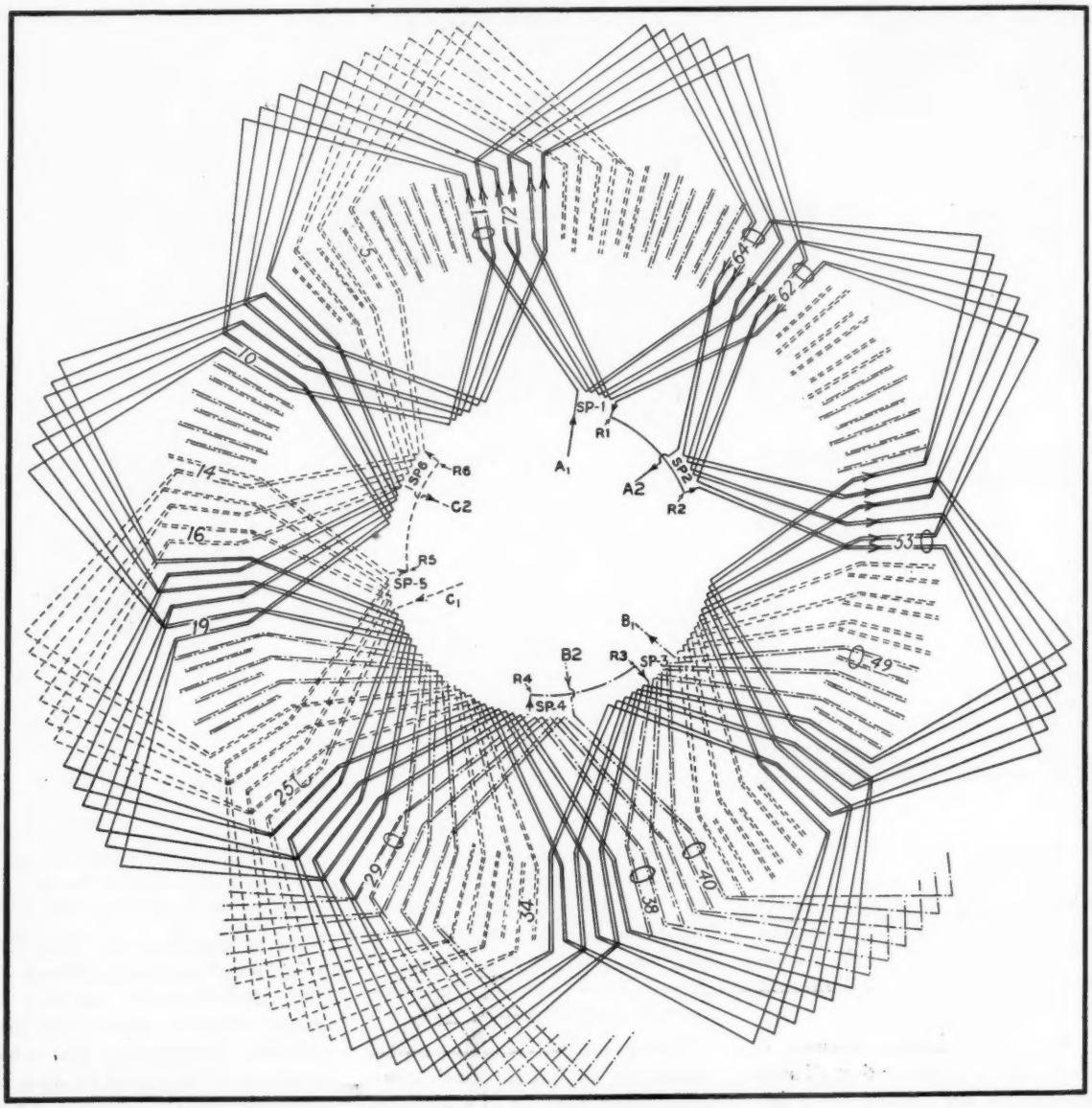

Fig. 2. This is the conventional type of a-c wave winding diagram, showing one complete phase of an 8 pole, 3 phase winding. The mass of detail in such diagrams make them very hard to read. The author's method of simplifying such diagrams can be seen by referring to Figure 3, which includes all the data of Figure 2 but without the confusing mass of lines and details. Note especially that in the simple diagram of Figure 3, the "short pitch" feature is brought into clear focus whereas this item is lost in the detail of the larger diagram shown above. (This particular diagram is for a rotor of 72 slots, 4 conductors per slot, 3 slots per pole per phase. Back and front pitch are 1 + 10.

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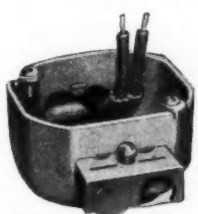

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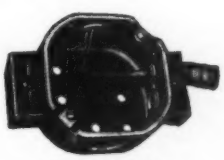

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across the front to top of slot 64, forming a short pitch, of 1 and 9. The same condition exists between the A2 and R2 leads at SP2 area.

The A1-R1-A2-R2 leads emerge from slots 1-64-62-53. Likewise, the B1-R3-B2-R4 leads emerge from slots 49-40-38-29, with SP3 and SP4 between the B1 and B3, B2 and R4 leads, respectively. The C1-R5-C2-R6 leads are from slots 25-16-14-5, with the short pitch areas SP5 and SP6 as shown.

Thus in each of the three lead sections, there are grouped within a short radius all of the important connections for one phase. When these leads are located and properly marked, the result of the winding and connecting process is relatively simple.

Simplified Connecting Diagrams

To present some idea as to how the new working diagram reduces the complicated diagram of Fig. 2 to a small sketch, compressing the essential data into an easy-to-read small area, we will reduce Fig. 2 in two steps.

The first step is shown in Fig. 3, where the basic phase lead group slots are shown, and a separate line is used for each phase. The A phase is shown on the top line with all conductors for slots 1-72-71, 64-63-62, and 55-54-53 filled in. A solid line indicates a top coil half or lead and the dotted line the bottom coil half or lead. With one-piece coils, the back pitch is fixed at 1 and 10, and one coil is drawn in from slots 53 to 62.

Across the front, the A1-R1-A2-R2 leads are drawn into the proper slots, then the coils are connected across the short pitch areas, SP1 and SP2. Then by filling in each phase, as shown in Fig. 3, we have a small connecting diagram with all the data of Fig. 2 but without the confusing mass of lines and details.

Note in Fig. 3 that the short pitch feature is brought to a clear focus, showing that with four conductors per slot "in series," one conductor in each slot, marked with the arrow, is a short pitch lead. This item is lost in the greater detail of the larger diagram, Fig. 2.

In Fig. 4, the data of Figs. 2 and 3 is further reduced, and arranged for increased slot combination range, in conjunction with tables, etc. In Fig 4, each of the three phase lines are marked A phase, B phase, C phase Only the slot and front end connections are shown. The diagram is arranged for two conductors per slot, as this conveys the essential data without

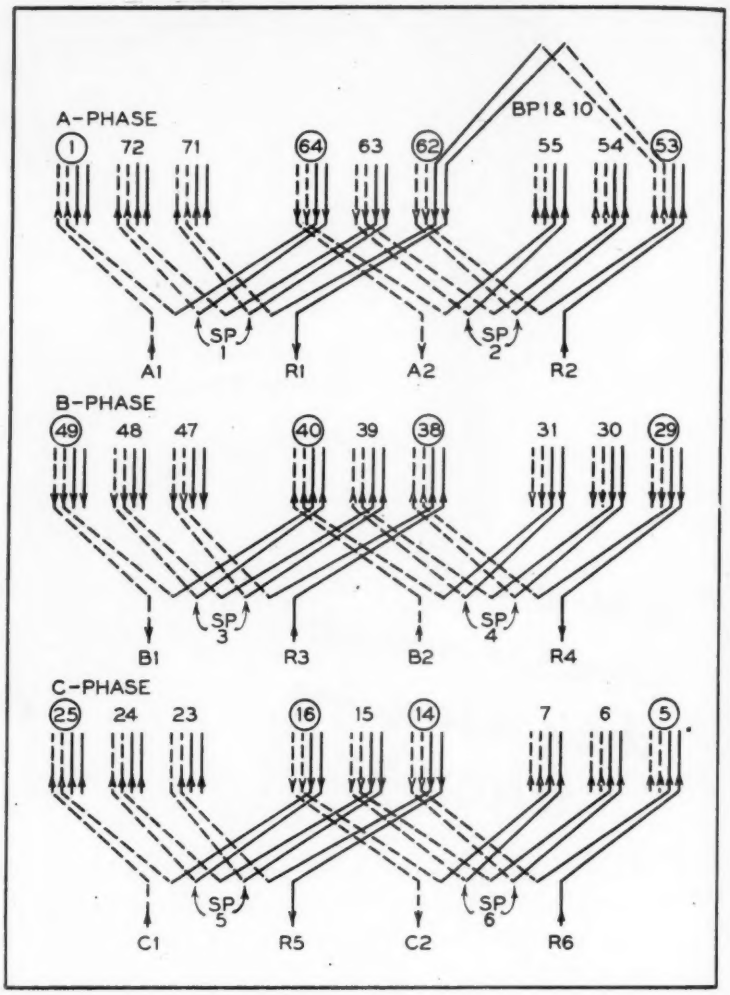


Fig. 3. A simplified connecting diagram for the wave winding shown in the conventional diagram of Figure 2. It includes all the essential data shown in Figure 2 but without the confusing mass of lines and details. The solid lines indicate top coil half or lead while the dotted lines indicate bottom coil half or lead. The numbers represent slot numbers, starting arbitrarily with the slot containing the A1 lead as slot number 1. This is a 72 slot winding having 4 conductors per slot, for use in an 8 pole 3 phase motor. There are 3 slots per pole per phase. Left hand, leads on bottom, counter clockwise, back pitch and front pitch are 1 + 10, and short pitch is 1 + 9.

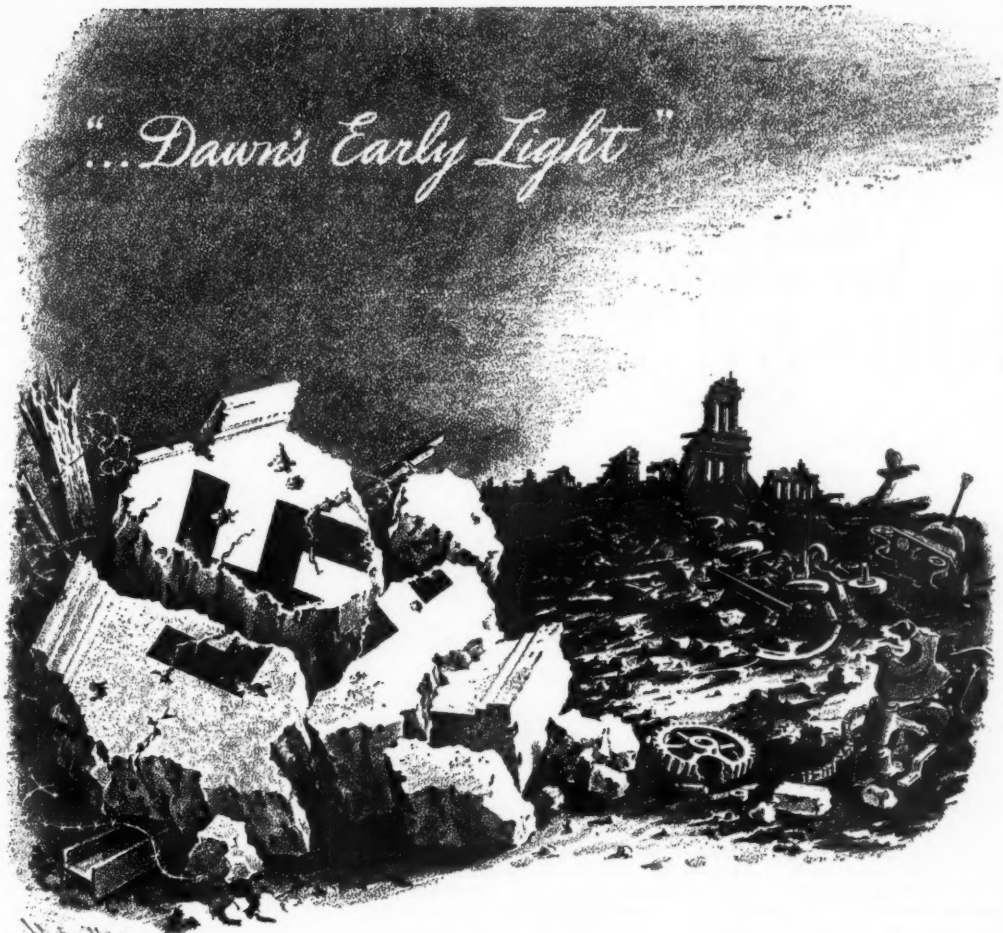
the additional confusing lines. Only one slot, number 1 for the A1 lead, is marked, the others being left blank so that a table can be made up for all slot and pole combinations for the 3-slots-per-pole-per-phase windings.

The arrangement of slots in Fig. 4 into groups of six lines, for three slots, makes it possible to identify it at a glance as the wave winding diagram for the combination of 3-slots-per-pole-per-phase. Thus in Fig. 4, we have an a-c wave winding diagram reduced to a simple form yet of ample size to produce all the necessary data.

The foregoing provides a general idea of the basis for this series of articles. In following chapters we will give the basic rules for wave windings. We will show how to construct the conventional and simple connecting diagrams. We will first cover the pole and slot combinations of the 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 slots-per-pole-per-phase windings.

For each slots-per-pole-per-phase group, we will cover four winding arrangements: left hand leads on top; left hand leads on bottom; right hand leads on top; and right hand leads on bottom. A set of tables will be given for all slots-per-pole-per-phase combinations for 4 to 24 poles.

"...Dawn's Early Light"



One hundred and thirty million Americans thrilled to the recent great news.

The Hun is finished. The evil powers of German militarism and Nazism have gone down for the count. May they never rise again.

So shall it be with the Japs. That war goes on . . . the end not yet in sight. But we have seen the dawn of peace and with redoubled effort we at home can help it rise in glory.

Meanwhile, we have another task to do . . . starting right now. Final victory in the field must not find us unprepared for economic victory at home.

No magic words will switch us overnight into the ordered channels of peace-time prosperity. To obtain it . . . to escape war's possible aftermath of silent factories, idle machines, discontent and bewilderment . . . we must plan carefully, wisely, promptly.

The responsibility falls upon all of us . . . employers and employes . . . in industry, agriculture or professional life . . . to map out a program of action.

Plan the ways in which *you* can further the cause of full and useful employment.

Plan so that *you* will have the means to carry out the program when the green light flashes on.

The first, and best way is to buy more bonds, and to hold on to all you buy.

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NOW... ALL OUT FOR THE MIGHTY SEVENTH

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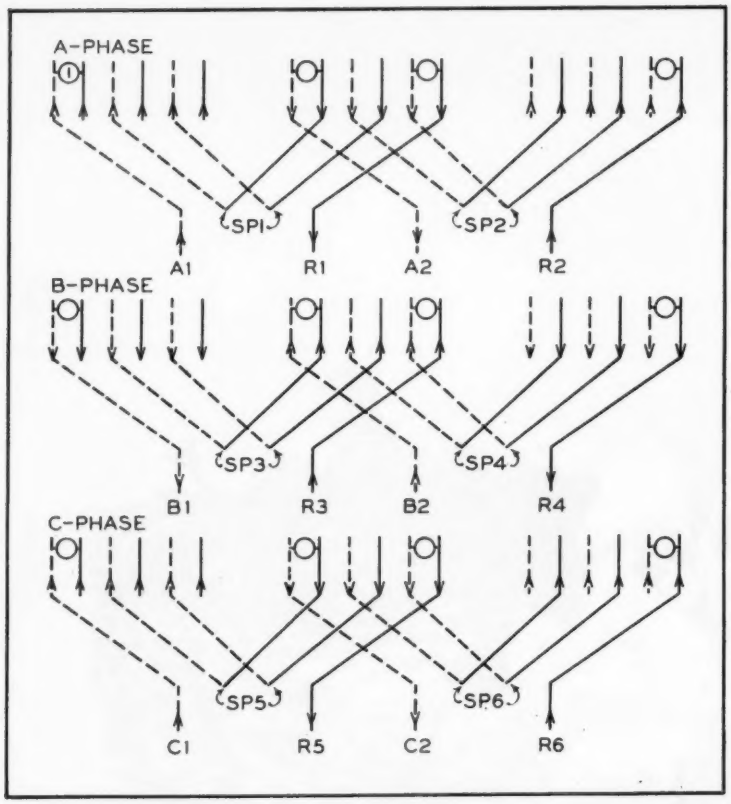


Fig. 4. This is a further simplification of the wave winding diagram shown in Figure 3. By using such a diagram in conjunction with tables to be furnished in following articles, it can be made to apply to all three phase wave windings having 3 slots per pole per phase. Only the slot and front end connections are shown. The diagram is arranged for 2 conductors per slot as this conveys the essential data without a mass of confusing lines. Only one slot is marked, number 1 for A1 lead, the others being left blank. These other numbers can be filled in from tables to be supplied later so that the diagram can be made to serve for all slot and pole combinations so long as the combination results in 3 slots per pole per phase. In following chapters, diagrams and tables will be supplied for slots-per-pole-per-phase from 1 to 10. The above diagram is drawn from left hand, leads on bottom, counter clockwise, any number of conductors per slot. Back pitch and front pitch are both 1 + 10, and short pitch is 1 + 9.

In addition, a "checking" table will be presented to permit the addition of slot combinations and to permit the spacing of the lead groups from 120 degrees apart to closer groupings if and as desired. The new diagrams, however, will be laid out for the 120 degree spacing since most wave wound rotors use this winding and use the 120 degree spacing.

In addition, future chapters will provide all the rules for laying out and checking a-c wave windings, and will cover major points on winding, insulating, wedging, banding, etc.

When the whole number slots-per-pole-per-phase, such as 1, 2, etc., have been covered, the 1½, 2½, 3½, 4½, 5½, 6½, 7½, 8½, 9½, 10½ or odd groupings will be discussed in the same complete detailed manner.

The next chapter will cover the 1-slot-per-pole-per-phase combinations and describe how the standard conventional winding diagrams are constructed and how to convert them to the simple diagrams.

Electronic Boiler Control

Electronics has taken on still another job. It controls the water-level of boilers, automatically shutting off the fuel supply if the water drops below the safety level.

Boston-Los Angeles Television

Approximately 7,000 miles of coaxial cable between Boston and Los Angeles will be used to carry simultaneously 480 different telephone channels and television pictures after the war.

Time Saving Motor Record Keeper

THE MOTOR REPAIR department of the Electrical Equipment Company, Miami, Fla., has a simple but effective method for learning at a glance whether or not a motor or generator or an important element of either has been in the shop before and, if so, its shop history.

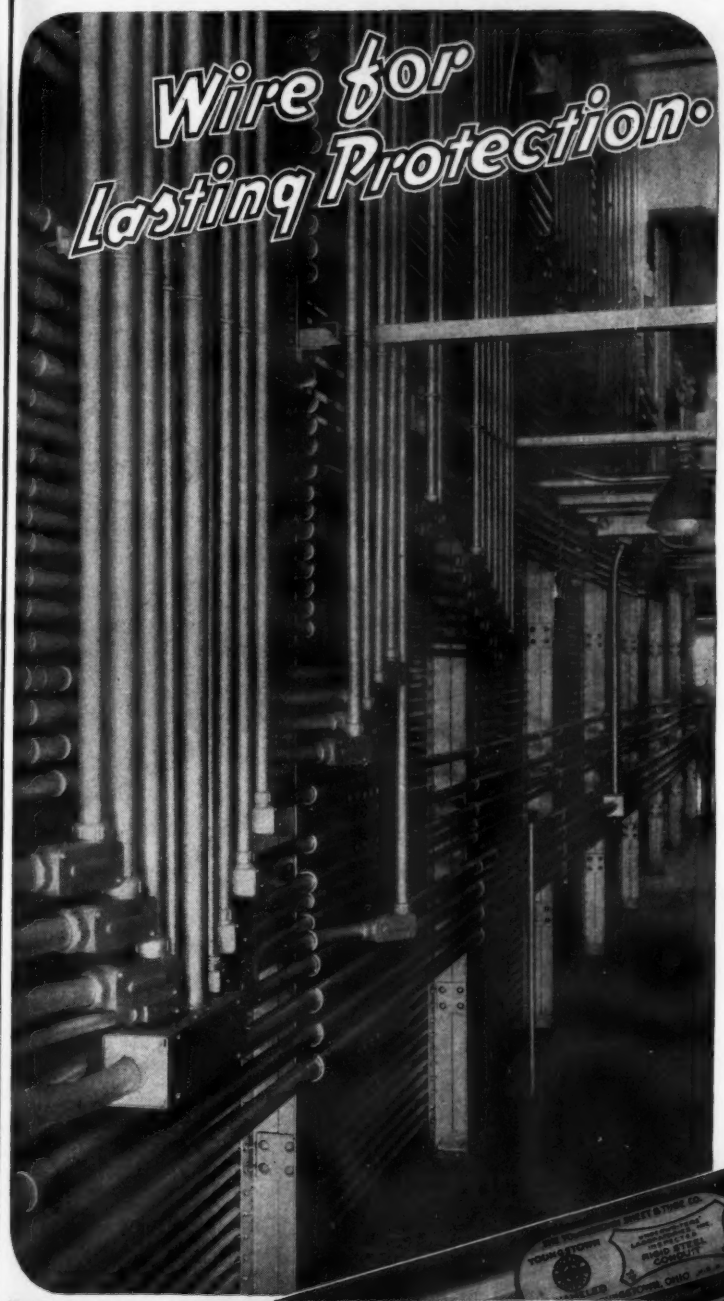
When a motor or generator repair job comes in, a hard die is used to record the job ticket number under which the work is to be done. As a prefix to the job number, a code letter indicates whether the work is a major or minor repair. Suffixing the job number, code letters and figures indicate the month and year and what operator did the work.

An absence of such markings shows that any particular piece of equipment is in the firm's shop for the first time. If it is a repeat, and there is any question about work previously done, the job ticket covering it easily may be looked up. The idea is much the same as that used by dry cleaners in marking clothing to be processed.

As an additional quick reference, which often saves time in hunting up a filed job ticket, Mrs. E. M. Flood, who supervises the company's winding department, keeps a running record of all winding jobs. When a job is finished, she enters on one line of a page in a loose leaf record book the job number, the date, the make and horsepower of the motor, the customer's name, the amount of material used on the job and an initial identifying the winder. Knowing the job number, the rest of the information on the record is available to her in a moment's time.

History keeping on motors is made easy by stamping job ticket numbers and date on every frame or rotor.

FOR SAFETY'S SAKE . . . USE CONDUIT *(Full Weight Rigid Steel)*



WHEN YOU REWIRE FOR PEACE

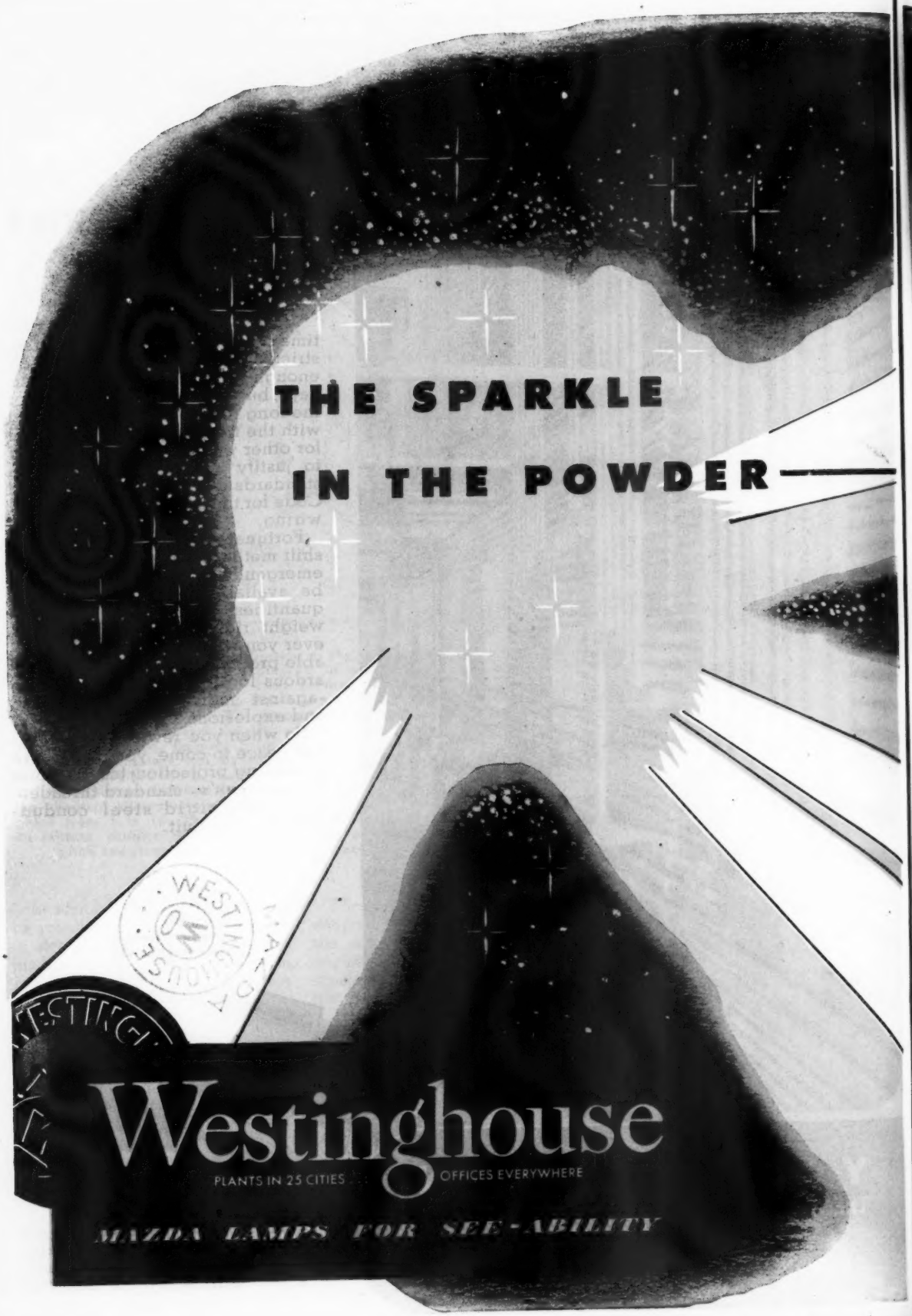
MUCH of America's wartime construction has been built on strictly an emergency basis--good enough "for the duration" perhaps, but questionably adequate for the long term. This fact, combined with the tremendous need of steel for other war uses, has been used to justify relaxation of the high standards of the National Electrical Code for the protection of electrical wiring.

Fortunately, the end of makeshift methods forced on us by war emergency is in sight. Steel will be available again in unlimited quantities. You can again use full-weight rigid steel conduit wherever you wish to provide dependable protection--especially in hazardous locations and occupancies -against moisture, vapors, dust, and explosions.

So when you rewire for the lasting peace to come, you can rewire for lasting protection, too, by using Youngstown's standard-threaded, full-weight rigid steel conduit-Buckeye Conduit.

YOUNGSTOWN
THE YOUNGSTOWN SHEET AND TUBE COMPANY
YOUNGSTOWN, OHIO
Manufacturers of
CARBON - ALLOY AND YOLOY STEELS

Ask your distributor for:
Youngstown Buckeye Conduit-Pipe and Tubular Products - Sheets - Plates - Electrolytic Tin Plate-Coke Tin Plate-Bars-Rods-Wire-Nails-Tie Plates and Spikes.


THE SPARKLE
IN THE POWDER
WESTINGHOUSE
Westinghouse
PLANTS IN 25 CITIES
OFFICES EVERYWHERE
MAZDA LAMPS FOR SEE-ABILITY

PUTS SEE-ABILITY IN THE LAMPS

The powdered phosphor in Westinghouse Fluorescent Lamps is one of the secrets why they last so long—stay so bright—and are so efficient. The soft, cool light that makes Westinghouse Fluorescent Lamps famous is due in no small measure to the care and attention paid to the coating of the glass tube.

Starting with the finest materials available, the powder is ground to the exact grain-size, carefully blended, acid-washed, fired and then impurities are removed so that not one part in a million remains to affect the light output. The result is a coating that gives you the bright sparkle and long life you naturally look for in a fluorescent lamp.

Westinghouse engineering and manufacturing leadership has brought you this. And with it, the confidence that the name "Westinghouse" is not only a "buy-word"—it is a "sell-word" wherever quality is known and appreciated.

Westinghouse Electric Corporation, Lamp Division,
Bloomfield, N. J.

A DIGEST OF SUCCESSFUL SELLING IDEAS

THE SELLING PARADE (REGISTERED)

BY CHARLES B. ROTH

YOU'RE NERVOUS, SO IS HE

Good old Colonel Frank Mayer, who's 95 this month, and who knows just about everything there is to know about any subject pertaining to outdoor life, told me that if I ever wanted to be a horseman, which at that time I very much did, I would have to lose all fear of horses and all nervousness about them.

"A nervous horse is a sure sign of a nervous rider," said the Colonel. "A nervous man can fret a horse and drive him wild, but a calm man can use the same horse in wild traffic and have no trouble.

"How does a horse know you're nervous?" I asked, like a tenderfoot.

"He knows as much about your feelings as you do. Maybe more Sometimes when you don't know you are the least bit nervous the horse knows you are. Feelings, as you have doubtless heard, are contagious. You can't keep the horse from acquiring them."

We're not talking about horsemanship here, but salesmanship. There the same idea holds—you cannot hide your true feelings from your prospect. You do not have to press them upon him or tell him your fears or troubles. He senses them. They are contagious.

Now, if any sign of fear or worry strikes home to your prospect, you should obviously omit all such signs from your life.

In their place you should put signs of confidence in yourself, for such feeling is also contagious, and if you have self-confidence and a sense of service, your prospect can't be very long in finding it out.

All this is old to you, of course, for you have read, heard it many times. But it is an old truth so important it bears re-telling, like the things we most need to know, the Golden Rule, the Constitution of the United States, things like that, you know.

KNOW YOUR ONIONS

Norval Hawkins, Henry Ford's first sales manager and in his day one of the greatest virtuosos of salesmanship, was astounded when the salesman sitting next to him in the waiting-room took out a bunch of cards, shuffled them, drew one from the top of the deck, read it, mumbled something to himself.

He watched the salesman until his curiosity would no longer be restrained. Then he asked the salesman what under the shining sun he was doing.

"Oh, just playing a little sales game I invented," the salesman responded.

"What do you call your little game?"

"Objection solitaire."

"Oh."

"You see these cards?"

"Yes."

"There are fifty-two of them. On each I have written an objection some prospect either has or will some day bring up when I call. In my mind I have worked out the answers. Are you beginning to see the light?"

"I believe so," said Norval Hawkins.

"Whenever I have a few spare moments during the day, as I have now, I shuffle my deck, and then take the objections up as they come, and give them a mental working over," the salesman continued.

"What does this practice accomplish?" asked the noted sales manager.

"Makes me ready to handle any objection anyone can possibly bring up," said the salesman. "No matter what the buyer springs on me, I don't have to hem and haw. I'm ready to take what he dishes out and pass it right along back to him, with added interest."

Mr. Hawkins wanted to know if the salesman's sales had increased since he began the practice. Oh, yes, the salesman said. Almost doubled.

"But the nicest thing is the sense I have of being absolutely prepared for whatever may come up," the salesman said.

Your success or failure in the long run depends on how you meet and handle objections. Almost every difficulty you are likely to encounter you can anticipate and work out the answer for before you actually meet it. In this way you will always be a jump ahead of trouble.

Which is a mighty good way to be.

GET ON THE RIGHT SIDE

Considering that it is easier to be right in your angle than wrong, it is amazing how many salesmen, who should know better, never give any thought to the one fundamental of selling everything—approach the prospect from the selling side.

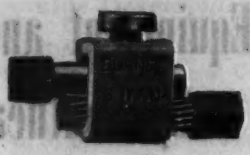
Once I knew an awful example of a salesman. He sold ink. He had a violent temper and whenever a prospect

refused to buy, this dolt would blurt out: "How do you expect me to live? How can I pay rent, hire an office, keep up my car if you don't buy my ink?"

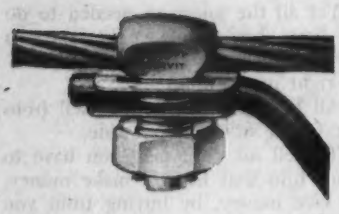
He really said it. I have heard him.

The prospect usually had the right answer. Depending upon the degree of his gentlemanly instincts and his temperament, he told the salesman to get out or reminded him that after

SERVIT (Type KS) Forged for High Strength. For copper and Copperweld conductors. 13 sizes take from No. 10 solid to 1000 Mcm. Also available in aluminum.



BUTTIN (Type KP) Compact, inexpensive; ideal for making connections between service drop conductors and entrance leads.



SERVIT (Type KSAKF) For aluminum to copper connections. Consists of High Strength aluminum Servit with bimetallic Copral washers to keep similar metals in contact.

Connectors for Overhead Distribution

Rural or Urban

Burndy *makes them all* . . . in sizes and types for every rural or urban overhead need . . . for either copper or aluminum conductors. All provide the high strength, corrosion resistance, electrical efficiency, and the installation ease essential for efficient, low-cost overhead service. Catalog gives complete description. Send for your copy . . . Burndy Engineering Co., Inc., 107-H Bruckner Blvd, New York 54, N. Y.

Headquarters for CONNECTORS

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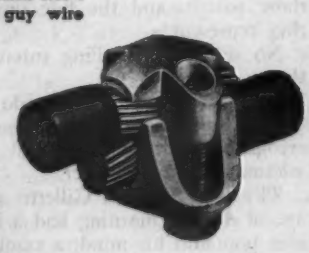
In Canada: Canadian Line Materials, Limited, Toronto 13. Foreign: Philips Export Corporation, 100 E. 42nd Street, New York 17, N. Y.

REDHEAD (Type HR) Completely insulated live-line jumper clamp for use in pairs with a flexible connecting cable for shunting equipment.

HOTTAP (Type HTE) A well balanced hot-line tap for low-cost work. Eye-bolt fits standard hot-line sticks. Available for copper or aluminum conductors. Also heavy duty types.

CLIP (Type BC) Bronze Clips for dead-ending work. Available in 8 sizes, for copper wire sizes No. 4 to 750 Mcm . . . and guy wire sizes ¼" to 1".



UNIVERSAL CLAMP (Type UC) Accommodates a large range of cables and wires in either groove. Available in 6 sizes to handle from No. 8 solid up to 1000 Mcm.

TAP CONNECTOR (Type KVS) Strong, compact, quickly installed. Multiple bolts for high contact pressures. Five sizes take from No. 4/0 Str. to 1000 Mcm.

GROUNDEM (Type GH) An economical, non-corrosive ground clamp for driven rod or pipe. Slipped over top of rod or installed from the side.

ARMOR ROD CLAMP (Type BPG) For tapping from a run of ACSR protected by armor rod. Has heavy spring plate to keep conductors under constant pressure.

all it was no concern of his, the prospect's, how the salesman paid his rent, bought tires for his car.

Yet all the salesman needed to do to have his selling right was to give it a little jerk so that it was headed right in its philosophy.

All he needed to do was sell from the selling or the profit side.

To sell ink to a man you have to show him that he will make money, or save money, by buying from you instead of from someone else. We all want to make money, save money.

This is so simple a truth that I feel it is unnecessary for me to write it down, yet experienced salesmen often make the mistake of losing sight of the right side, and going haywire in their thinking.

To warn you always to think in terms of profiting the other fellow is my purpose in bringing up so banal a thing, so primary a thing about salesmanship.

SELLING COMES FIRST

There has been a good deal of talk, much of it loose, about the wondrous postwar world in which we shall dwell; about the gadgets and electronic wonders, the conveniences, of that world.

Many of them will come to pass, but none of them will become realities unless there is some pretty hard selling.

What postwar planners do not always realize is that selling comes first, must always come first in an economy such as ours.

There are many patents on file in the Patent Office in Washington that would have added to our lives, patents of things actually needed. There they lie, forgotten. What happened to those patents and the fine products they represent?

No one had a selling interest in them.

Alexander Graham Bell made a telephone years before you had one. Everyone laughed at it. But Bell was a salesman. He put it over.

The late King C. Gillette at the age of 40 one morning had a bright idea pop into his mind: a razor with a removable blade. Before nightfall he had a model. But do you know how long it was before the safety razor was available for you to buy one?

Nine years. Gillette, a salesman, had nine hard years of selling before he had the idea accepted.

The pathway of progress is lined with profits, for it's only when you show an enterpriser a profit or a chance to make one that you win his interest. And profits come from one source—sales.

Equipment and Methods Discussed By Southeastern Engineers

Circuit Protection on Customers' Premises

*By J. C. Langdell**
Commonwealth & Southern Corp.
Jackson, Mich.

GREAT strides have been made in the design and efficiency of turbines, transformers, line materials, meters, etc., and yet, at the present time, the majority of new and rebuilt home wiring installations are equipped with a method of protection which, from an engineering standpoint, is as antiquated as the horse and buggy days. The principle of operation of the fuse contributes to no small extent to the misuse and tampering which has been consistently complained about by the inspector groups, and there is no doubt that a radically improved type of protection is possible and much to be desired.

In the solution of any problem, the most practical method is to endeavor to eliminate the cause, and it is our feeling that if we provide the customer with an overcurrent device which does not require him to provide additional replacements whenever it operates, then we are eliminating, to a large extent, the cause of tampering. No fuse, tamper-resisting or otherwise, seems capable of fulfilling the requirements, but the modern automatic circuit breaker, since it is a device that does not require the customer to provide additional parts to restore service and since the protection it affords is adequate in all respects, offers a complete solution of the problem. It will eliminate the major cause for tampering and thus overcome the main objection to fuses which the inspector groups have constantly complained about for over twenty years. It is modern and seems to be the complete answer to the problem of circuit protection in all of its aspects.

Circuit breakers for residential protection have been on the market since 1929. At the present time, there are about two and a half million circuits in domestic and commercial installations equipped with these devices. Their record of service has been particularly satisfactory. The majority of them in use at present are of the thermal type but they can also be obtained in the thermal-magnetic and straight magnetic types which answer the objections of some groups which have not felt that the thermal type offered equivalent protection to fuses. While it is true that the cost of circuit breaker equipment is slightly higher in most cases than that of fused equipment, the differential in the case of a complete wiring job is so small as to be of practically no consequence. Circuit breakers have many advantages of special interest to the utilities and, by providing to the customer a safer and more convenient device for restoring service, justify completely their original cost. These advantages to the utilities are:

1. Their use results in lower operating costs because of decreased fuse-service calls, irrespective of whether or not a charge is made for such service. Such charges seldom if ever cover the entire costs of the service.

2. Their exclusive use in the territories served will eliminate the difficulty and confusion that will attend the mandatory use of Type S fuses when fused-type equipment is used.

3. Greater probability of improved continuity of service, especially in rural areas, warrants their universal promotion. Rural customers are solely dependent on continuous service for electric pumping, refrigeration, incubators, etc., and many customers for the operation of oil, gas and stoker-fired furnaces for house heating.

4. They will prevent overloading of circuits and thereby limit voltage drop, permitting more satisfactory appliance operation.

5. The installation of proper copper capacity in branch circuits will be fostered because of Item (4).

6. Customers will be provided with equipment that represents the best modern engineering practices for electrical protection, safety and convenience.

7. Improved customer satisfaction with the service supplied will result

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***Excerpts from a paper presented before the Spring Meeting of the Engineering and Operation Section, Southeastern Electric Exchange, held in Atlanta, March 22 and 23, 1945.**

and, as a consequence, public good will should also be improved.

Circuit breakers will answer all of the complaints from the inspector agencies which they attribute to fuses and have many advantages over the fused type equipment. Of special interest to the utilities is an appreciable decrease in operating costs for service calls, irrespective of whether the utilities absorb the cost or whether it is charged against the customer.

An analysis of comparative data from a member company on service calls in areas largely equipped with fuses, as compared to areas largely equipped with circuit breakers is very interesting. It is particularly notable that for individual customers equipped with circuit breakers, service calls amount to only about 10% of the number required where fused type equipments are installed and that in areas having a large percentage of circuit breakers, the total service calls amount to less than 25% of the number required in areas having a large percentage of fused equipment.

Only recently a Joint Committee of the Edison Electric Institute and Association of Edison Illuminating Companies has been formed to cooperate with the circuit breaker manufacturers towards the possibility of setting up a standard that would provide for interchangeability of all types of single pole circuit breakers in several standardized enclosures. While I do not feel that this standard can be brought about for some time, it does show that there is a large amount of interest on the part of a number of utilities toward the possibility of recommending to the customers a standardized and improved means of overcurrent protection.

A recent survey of a large number of utilities indicates a growing desire to obtain a greater use of circuit breakers on their lines. This has been accelerated by the Type S fuse requirement and also by the desirability of using overload protection that is modern and up to date. The saturation curves of circuit breakers now installed show that only about 3% to 4% of our customers in residential occupancies are equipped with breakers, notwithstanding the fact that these breakers have been manufactured since 1929 and have been substantially reduced in price. It is very doubtful if circuit breakers will ever be the same in price as comparable fused equipment in all cases, and therefore it seems to me that if breakers are to be universally used, they will have to be sold on the basis that they are superior to fuses in service equipment and that a higher price is readily justified

Progress in Power Apparatus Development

*By A. C. Monteith**
Westinghouse Electric Corp.
East Pittsburgh, Pa.

ONE of the most noticeable trends in transformer design over the past 20 years has been the more general use of three-phase transformers. Some idea of this can be gained from a few random but representative figures. In the 20's we were building approximately seven per cent of our output in the small power transformer field, in 1936 this had increased to 60 per cent, in 1940 to 75 per cent, and so far in 1945 we have sold 84 per cent of our transformers as three-phase banks in this field. Three-phase transformers have some obvious advantages: initial costs, installation costs, and maintenance costs are all lower. Losses also are somewhat less than for the corresponding single-phase bank of transformers. It has the disadvantage of losing the whole bank in case of failure, but system inter-connections have given a reserve in case of an outage on the bank.

The modern transformers, however, have considerably improved reliability over previous transformers. The factors that will be outlined later apply not only to three-phase but also to single-phase transformers, but these are arguments in favor of having a greater degree of confidence in three-phase transformers than we might previously have had. A few of the salient points contributing to greater reliability of modern transformers are:

1. Better understanding of design features, especially those involving surge strength of transformers.
2. Better understanding of the characteristics of natural lighting.
3. Better protective devices and better protective schemes.
4. Better mechanical features in the tank seals, mechanical parts, bracing of conductors, and the like.

Some might ask how do we know that the theoretical strengths are built into the transformers and that the human element in the building of such does not impair the expected performance? It is true that on paper a design might be perfect, but if it is not built according to the design then there can still be trouble. Our experience with impulse testing over the past years has indicated that this test has brought out more of these human errors than any other test we have had. This has so impressed us that we have now installed a 3,600,000 volt generator in the production aisle and are submitting all of our power transformers to impulse test as a check on the quality of the product.

The routine test incorporates two front-of-wave tests with 1000 kv per micro-second rate of rise, and two full wave tests with normal excitation provided. The severity of test is as close as possible to the ASA full wave standard values and NEMA front-of-wave for the particular insulation class. These tests were selected as the most practical after reviewing tests on 6,000,000 kva of transformers tested in our laboratory at Sharon. Seventy per cent of the insulation failures have resulted from difficulties in the materials, in processing or in workmanship. The bulk of these difficulties required only minor corrections for replacement of the faulted part for the transformer to pass test. In a few cases design alterations were necessary. Without impulse testing, few, if any, of these defects would have been discovered.

The extension of impulse testing power transformers for quality control is a logical step. It is effective, economical, and lends itself to production testing. Futher experience will show how to simplify and expedite quality control testing, maintaining at the same time its full effectiveness in assuring power transformers of highest quality.

Air-Cooled Transformers

One of the most important new developments is the large dry-type air-cooled transformer for indoor applications. This transformer originally designed for central-station use has found broad use in such applications as industrial plants, office buildings, mines, chemical plants, and other indoor applications. These transformers have made possible the installation of power supply and complete substations indoors at the center of the load, resulting in the most economical system of power distribution. This transformer is different from the old air-blast transformer in that its insulation is principally air, porcelain, glass, and materials containing a minimum of combustible substance. Air-cooled transformers have less heat-storage capacity but they are insulated with Class-B insulation, which is not as critical to temperature as Class-A insulation used in liquid-filled transformers. A number of air-cooled transformers have operated at 150 to 250

***Excerpts from a paper presented before the Spring Meeting of the Engineering and Operation Section, Southeastern Electric Exchange, held in Atlanta, March 22 and 23, 1945.**

per cent load for more than 24 hours at a time without interruption of service and with little or no deterioration in insulation. Approximately 2000 air-cooled power transformers are in service, totalling more than 1,000,000 kva in ratings up to 4,000 kva and 15,000 volts. Many of them have been in continuous service for as long as seven years. Though many of them have been operating under most severe conditions, none have failed as a result of ills that one would associate with air-cooled apparatus; that is, moisture, high humidity, vacuums, accumulation of dust or dirt, or excessive winding temperature.

The air-cooled transformer allows the building of indoor substations completely dry when applied in combination with air interrupting devices. A totally-enclosed dry-type transformer has been built and is in service and designs have been worked out for dry-type transformers that will allow partial submersion. These features will mean much in the application of this device to network systems.

Circuit Breakers

The trend is decidedly towards the use of air-blast circuit breakers for indoor heavy power-station switchgear. This type of breaker lends itself well to installation in standardized metal-clad switchgear. Incidentally, this is a good example of where effort in connection with standardization has certainly shown results during the war. Eighty per cent of the switchgear built during the last two to three years has been along standard lines as outlined by the standardizing committees. It has allowed reductions in prices even in the face of increased costs.

The pressure to eliminate oil in outdoor substations has not been so great. A few installations have been made with air-blast breakers but the general practice is still to use breakers of the oil type. Improvements in these breakers have no doubt slowed up any tendency to go to outdoor air breakers. Just recently a new line of high-voltage breakers has been developed that allows approximately 50-per cent reduction in oil content of the breaker, results in higher speed of arc interruption and of overall clearing time, and lends itself better to reclosing duty cycle of either the three-pole or single-pole type.

This type of oil circuit breaker is now available for voltages ranging from 115 to 230 kv with interrupting capacities from 1,000,000 to 3,500,000 kva. It interrupts the power arc within five cycles on a 60-cycle basis and is suitable for fast reclosing. The breakers are operated by pneumatic mechanisms, although the conventional solenoid can be used if necessary. Reclosing times are available down to 20 cycles on a 60-cycle basis and tests in the High-Power Laboratory show that the breaker performance on the second interruption is the same as on the first, indicating that there is no loss of interrupting ability because of the gas remaining from the first interruption.

Rural Electrification Operating Experience

*By J. W. Cavin**
Miss. Power & Light Co.
Cleveland, Miss.

FOR MANY YEARS our company has been engaged in extending lines into rural areas, and although the war temporarily checked this program, it was resumed as wartime restrictions would permit.

Our experience in maintaining and operating our existing rural lines is, of course, about the same as any other operating company. Our lines have held up remarkably well with the amount of maintenance that we were able to give them, being a tribute to the original designers. Lightning and woodpeckers have taken their toll of poles, but we have been able to a large degree to keep abreast of this situation.

We have had one experience during the past two winters that borders somewhat on the unusual—that is, for us—and this same experience is related by the various REA Co-ops. For the past two winters great clouds of birds have wintered in the Mississippi Delta. These birds resemble blackbirds although I believe the correct name for them is starlings. These birds were in such great numbers that when they settled on either conductor of a considerable number of our ridge pin lines their weight was such as to throw the conductors together when they flew off. This, of course, caused numerous outages and in a few cases burned the lines down.

We have one area in our territory that is of special voltage class with us. The area is fed from facilities of the City of Memphis and the circuits are 4 wire, 12 kv. However, most of the actual mileage is 6900 volt single phase common neutral tap lines. The original breaker control has, in the past, been at the source in Memphis, none having been added by us at the point of delivery at the state line. The area involves something over 200 circuit miles, about 1600 customers and approximately 500 transformers, and we have had so much trouble in the area that immediate action was necessary.

During 1944 we lost 11% of the transformers installed due to burn out, the cost of such repairs being in excess of $5,000.00. We have only two servicemen in the area and they made 450 trips to re-fuse or replace transformers during the year and ran up mileage estimated at 12,000 for this sole purpose. On this system we serve around 200 dairies who wholesale milk and milk products to the Memphis market. It, therefore, becomes obvious as to our anxiety to clear up this situation. Many of the transformers were installed originally without arresters or switches; others had arresters of various make and design, and the value of our grounds in the entire system was unknown to us. To add to our troubles, we have frequently been the cause of lockouts on the circuits originating in Memphis, which disrupted large industrial loads on their system. Our program, therefore, started off by the installation of modern, high speed breakers on the main feeder circuits where they crossed the State Line. These breakers not only protect the City of Memphis from faults on our system but establish a control point for fuse coordination. These large breakers are now being installed.

Tree Trimming Emphasized

The second step in our program was a thorough tree trimming job on our own lines, supplemented by fuse coordination, transformer gapping and installation of additional grounds over the entire system to insure known ground resistance values of each mile of line. Fuses were installed on each transformer. Inasmuch as the large breakers had not arrived we temporarily installed single phase reclosers until the large breakers were placed in operation.

This plan of fuse coordination and gapping is, of course, not new as it is merely a plan whereby the fuses and breaker settings are so coordinated to where the breaker operates fast enough to clear transient faults and slow enough on subsequent operations to blow proper fuses on permanent faults. On only one line, which was about thirty miles in length, has the work been completed long enough to give us any operating results. We have had only minor lightning the past few months but we have not lost a single transformer on this line, and the counter readings on the rural re-

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they all agree on

...because THESE INDUSTRIAL FLUORESCENT FIXTURES OFFER GREATEST ALL-AROUND ADVANTAGES YET CONCEIVED

In MITCHELL-lighted plants everywhere, *workers* see better . . . do more . . . tire less. Up goes morale. Up goes production. But that's not all. *Maintenance men* find MITCHELL units easier to mount . . . simpler to service. *Plant owners* are quick to recognize these benefits. They heartily "O.K." the sound engineering . . . the rugged durability . . . the true economy of these certified fixtures. In the complete MITCHELL line of 2-40 watt, 3-40 watt, and 2-100 watt models they find the right answer for their particular lighting problem.

To the *distributor* and *contractor,* all this means easier sales . . . greater customer service . . . volume business . . . maximum profits. Everyone agrees on MITCHELL. *No wonder!*

BUILD SALES WITH THESE AIDS!
Distribute full-size Catalog No. 281 and Pocket-size Catalog No. 290. Each tells full story.

All These Features

ALL-STEEL REFLECTORS, WIREWAYS
OPEN-END OR CLOSED-END
BAKED OR PORCELAIN ENAMEL
"AIRCRAFT" INSTANT-LATCH
INSTANT-START MODELS
EASY-MOUNT ACCESSORIES
SINGLE OR CONTINUOUS ROW
SURFACE OR SUSPENSION
U. L. AND E. T. L. APPROVED
RLM CERTIFIED

MITCHELL
FIRST IN POPULARITY

Mitchell Manufacturing Company
2525 CLYBOURN AVENUE, CHICAGO 14, ILLINOIS
West Coast Factory and Sales Office: 1019 N. Madison Ave., Los Angeles 27, Cal.

closer reveal numerous operations. We are convinced, therefore, of the soundness of the scheme.

Our program is proceeding as fast as manpower will permit, and although it is being done at considerable expense we feel sure that the cost will be more than offset by our savings in transformer damage alone in addition to the savings in mileage, manhours, lost revenue and the intangible benefits of customer good-will.

In regard to construction of new lines during the past year or two, I will state that available materials have had a great deal more to do with our specifications than our actual desires. We have constructed a few lines out of copperweld that we had in surplus but most of our lines have been built with number 6 hard drawn copper. In many cases because of terrain conditions we would have preferred to use a conductor of higher tensile strength but we were always confronted with the matter of expediency in construction and had to content ourselves with what we could get rather than what construction economy might dictate.

The beginning of our wartime rural program began shortly after WPB released the first draft of Order U-1-c in the fall of 1943. As I mentioned before, dairying is growing by leaps and bounds in the north end of our territory because of the proximity to the Memphis milk market. Most of the dairy men have pumps and home lighting systems that are worn out and, having lost most of their manpower, were in critical need of electric service. When U-1-c was issued, therefore, we set to work to construct those extensions that would comply with the order.

Liberal Rural Policy

Our rural policy, we believe, is most liberal. Stated simply, we will construct a mile of single phase line and hang a transformer up to 5 kva for a monthly minimum of $4.50. This policy has been in effect several months and all minimums on our former policy have been reduced to this level. All advances in aid of construction on single phase rural extensions formerly built, have been refunded to the customers in a lump sum. Most of our lines average from three to five customers per mile and since our rate schedule specifies a monthly minimum of $1.50, the matter of administering such a liberal Rural Policy is extremely simple.

We constructed approximately 100 miles of line in 1944 and anticipate completing approximately 300 miles during 1945. About 90% of this construction was in the hill area as the large planters in the Delta have been somewhat slower to furnish electric service to their tenants, and since the farmers in the hill area are becoming more conscious of dairy farming their need for electric service is more pressing.

We have in Mississippi a rather unusual situation. There is a law on the statute books where-by the Co-ops are permitted to preempt areas by the mere filing of a map with the REA Board, such map indicating the location of their proposed primaries and supported by an affidavit to the effect that the majority of the potential customers in the areas have signified their desire to take service from the Co-op. Once this map is filed and the notice served upon the nearest competing utility, it is unlawful for that utility to contract with or to molest or interfere with the Co-op's intentions of serving the area for a period of eighteen months.

This has meant that in order to head off such preemptions we have been forced to put on a campaign of surveying and contracting with customers in areas we desired to serve. The securing of these contracts did not prevent preemption but does permit us to proceed to serve the customer regardless of the preemption. The securing of contracts from customer groups was done partially by our local office personnel but in the main by our Sales Department.

After we lost our last salesman to the draft, we had left only one sales person, being a home service adviser. After some discussion she was placed on rural work. Due to the simplicity of our Rural Policy and possibly due to the type of person, we have found this procedure successful. This home service adviser has secured the contracts from the customers by the use of working maps, followed the animal unit certificates through the County Board and in some cases has purchased the right-of-way from the property owners.

We have had the usual difficulties in securing the right-of-way from small land owners twenty to thirty miles away from the nearest town, and one of the most successful methods of doing this has been to take a notary public and call a meeting of the prospective subscribers at the community church or school. Usually there is one or more influential people in an area who are willing to assume the leadership of getting the people together, and these people have helped us very much. At this same type of meeting plans were laid for wiring the individual buildings and in many cases arrangements made with individual property owners for digging their own holes or clearing their own right-of-way on a contract basis. The benefits of this are obvious.

We have had many interesting experiences in dealing with remote areas, especially when the areas had been expecting service for many years either from our company or from a competitor. We have found that the farmers are so anxious to get the service and are so willing to cooperate with us that the mere sight of a construction truck or crew builds up such a degree of enthusiasm that competition is often eliminated. Probably this all stems from the natural human desire to be on the winning team or on the bandwagon. At any rate, we find that the mere securing of contracts to prevent preemption will only hold the territory for a certain length of time as it is actual contruction that the customers want and they will go to practically any extent to get the service.

In general, most of our lines in 1945 will be constructed with number 6 hard drawn copper wire on 35-foot poles, and where in many cases we would prefer using copperweld or aluminum we will have to be content to use the items that we are positive are available so as to coordinate our design and staking with the type of material we know we can secure.

Construction By Contractors

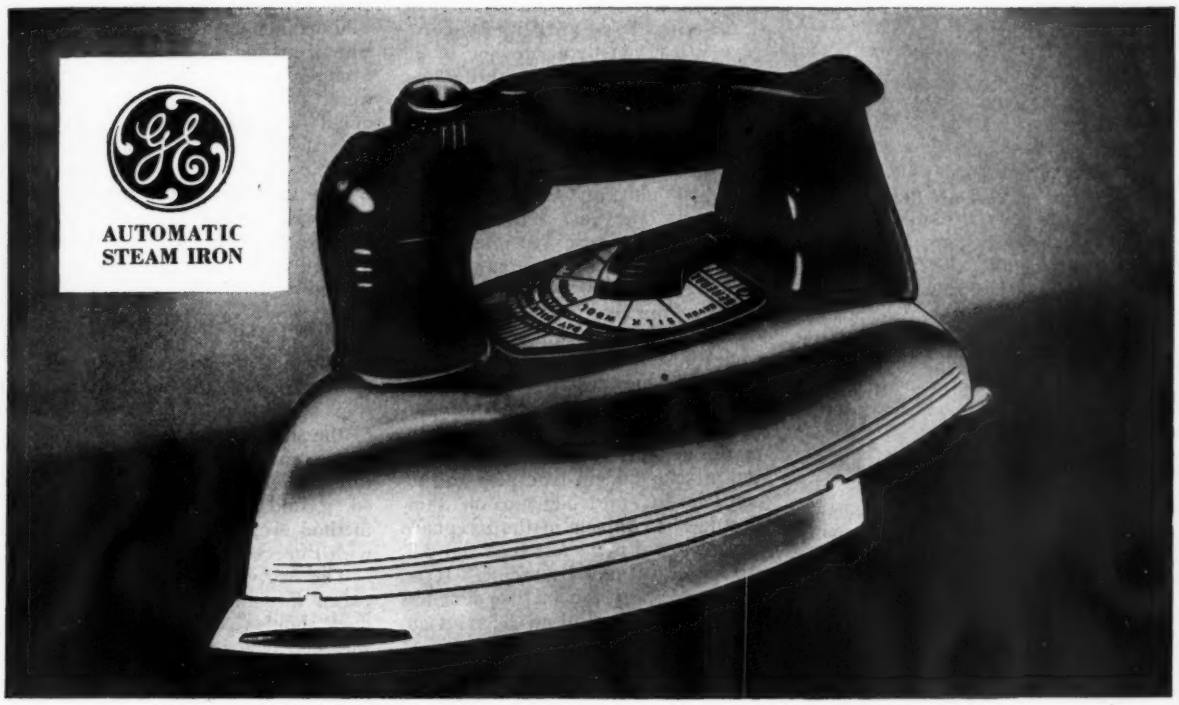
The question has been raised by one of the member companies as to the comparison of costs between company forces and contractor. About two-thirds of our construction in 1944 was done by contractor, at an average cost of $338.00 per mile for labor and other expense. It is our belief that during times such as these that any figure up to $350.00 per mile, assuming reasonable conditions otherwise, is acceptable. We have paid as high as $400.00 per mile due to the unusual terrain conditions involving the use of special equipment by the contractor. We further feel that regardless of economics that we have little choice and that contracting is the only means by which we can accomplish our construction objectives.

An actual comparison between construction by company crews versus private contractor indicates that the use of company crews is cheaper. It must be remembered, however, that in the case of a contractor all of his costs are included, and in our own case there are many indirect costs that are not charged to plant account. A good example would be on rainy days

(Continued on page 75)

Get set for a swing to Steam Ironing with the

G-E AUTOMATIC STEAM IRON



It's the *only* Steam Iron with the *Calrod Heating Unit — permits changing from steam to dry ironing at any time!*

And it has all these *extra* G-E features!

- **Steam-control varies the amount of steam to suit the fabric.**
- **G-E "Dial-The-Fabric" heat control.**
- **Double button nooks for ironing *under* buttons.**
- **Comfortable, cool handle with built-in thumb rest.**
- **Lightweight construction to cut ironing fatigue.**

Your Customers Will Want General Electric Steam Irons!

They'll be looking for the quality and dependability that have made G-E Irons *first choice* with women everywhere.

And they know steam ironing is the easiest ironing there is . . . that it's the best way to iron everything from light synthetic fabrics to heavy linens.

Start getting ready now! Plan your department with a full line of G-E Irons, and save a feature spot for the G-E Steam Iron. General Electric Co., Appliance and Merchandise Department, Bridgeport, Conn.

FOR FUN: *Don't miss Art Linkletter, in "The G-E House Party," every afternoon, Monday through Friday, 4 p. m., E.W.T., CBS. Other G-E programs are "The G-E All-Girl Orchestra," Sunday, 10 p. m., E.W.T., NBC. "The World Today," News, Monday through Friday, 6:45 p. m., E.W.T., CBS.*

For Final Victory — Buy And Hold More War Bonds

Everything electrical for better living in your home

GENERAL ELECTRIC

Industry Affected by Shipyard Standard of Electrical Work

By George Welman*

THE ELECTRICAL construction in emergency yards that build new ships is standardized after a fashion. It is not all National Electrical Code standard, and electric shock to workmen may be more frequent than it was in pre-war industry. The work in these ship building plants is not all inspected; in fact, some of the plants ignore the inspector entirely. Whether this is due to any fault with the inspection department or a disregard of the hazard on the part of the shipbuilding organization is a matter that deserves consideration and perhaps will be adjusted as time wears on.

It is not, however, the problems in the yards that build new ships that we will discuss in the present article. There seems to be a lack of coordination in standardizing construction on sea going vessels with the type of construction and materials generally used in wiring buildings. What are we going to do, after the war, with the marine electricians. These marine electricians are in the practice of wiring ships. The material used is entirely different from what is used for buildings on land. I am told that there is no systematic electrical inspection of the revamping of wiring done at ship repair plants at present.

Uniformity Needed

Regardless of the method used in marine construction, we are interested in some uniformity in standard construction. We should not blame the marine rules for our troubles, which will be mentioned later. The marine electric fittings are more substantial than the flimsy competitive stuff universally sold for house wiring. However, it is not always the "husky" type of construction that determines the safety of the equipment.

We are mainly interested in the use of equipment that is used on the ships being transferred to the shops on shore. The ship authorities tell us that the ship repair plant would have to carry a duplicate line of all machine tools if we are to insist that the connections for these tools when used in the shop be made to conform to National Electrical Code requirements. Take for instance the attachment plug and receptacle used on vessels. The plug is heavily made with an Edison base. No provision is made for grounding the frame of the tool.

When this tool is used in the shop it is connected into a lamp holder. It would be impracticable to change attachment plugs every time the tool is transferred from shop to ship and back to the shop. I don't blame the marine engineers for not adopting the present tandem type plug and receptacle for portable use on shipboard. The contacts in the receptacle are apt to fail in a short time and failures at sea cannot be excused. I can readily see why the marine designers want the heavy Edison base attachment plug.

The problem with this screw-base plug is to arrange for grounding the frame of the tool. The all metal ship certainly affords a well conducting path for anyone using the tool provided there is an insulation failure in the wiring system somewhere in the ship. I do not pretend to be familiar with shipwiring, but imagine that all conductors of a wiring system on a ship are insulated and there is no neutral or grounded conductor used in the wiring system. With the insulated wiring system and ground detectors on the ship switchboard, it is reasonably safe to use the tool without the frame being grounded, that is provided the current is supplied from the ship's generators. When emergency circuits are used from shore connections of the grounded a-c system then the hazard from electric shock is just as great as when the tool is used by a person standing on wet earth. The hazard could be reduced by using a 1 to 1 ratio transformer for a-c emergency circuits on ships with no conductor of the secondary grounded. Of course when current is supplied to the ship through a d-c shore generator with no conductor grounded, the hazard is also reduced but not entirely so, as the usual emergency d-c generators in ship repair plants do not have ground detectors on the improvised switchboard.

If the d-c temporary service is connected to the ship's switchboard the ground detectors on the ship's switchboard will suffice. Care should be taken to observe the ground detector. When the system shows a ground, the fault should be cleared at once.

Some manufacturers make a specialty of marine fittings and can supply 3-wire plugs and receptacles for ship work. Around ship repair plants it might be a good practice to connect the machine tools used on both land and the ships with a 3-wire plug that can be used for both locations so as to provide for grounding the frame of the tool through the plug when it is inserted into any receptacle with grounding terminal.

1-to-1 Transformers Useful

When a-c temporary conductors are connected with the bus bars on the ship switchboard to supply current to the ship circuits, while the ship is undergoing repairs, the 1 to 1 transformer should be used with ungrounded secondaries. This is the safest method even if the ship is equipped with three wire plugs and receptacles.

The heavy portable conductors between the ship switchboard and the dock should be of the heavy rubber sheathed type and connected through an attachment plug and receptacle rated for at least the total load supplied to the ship. Such a plug connection will pull loose in the event the mooring lines are unloosened and the ship set adrift under any emergency condition.

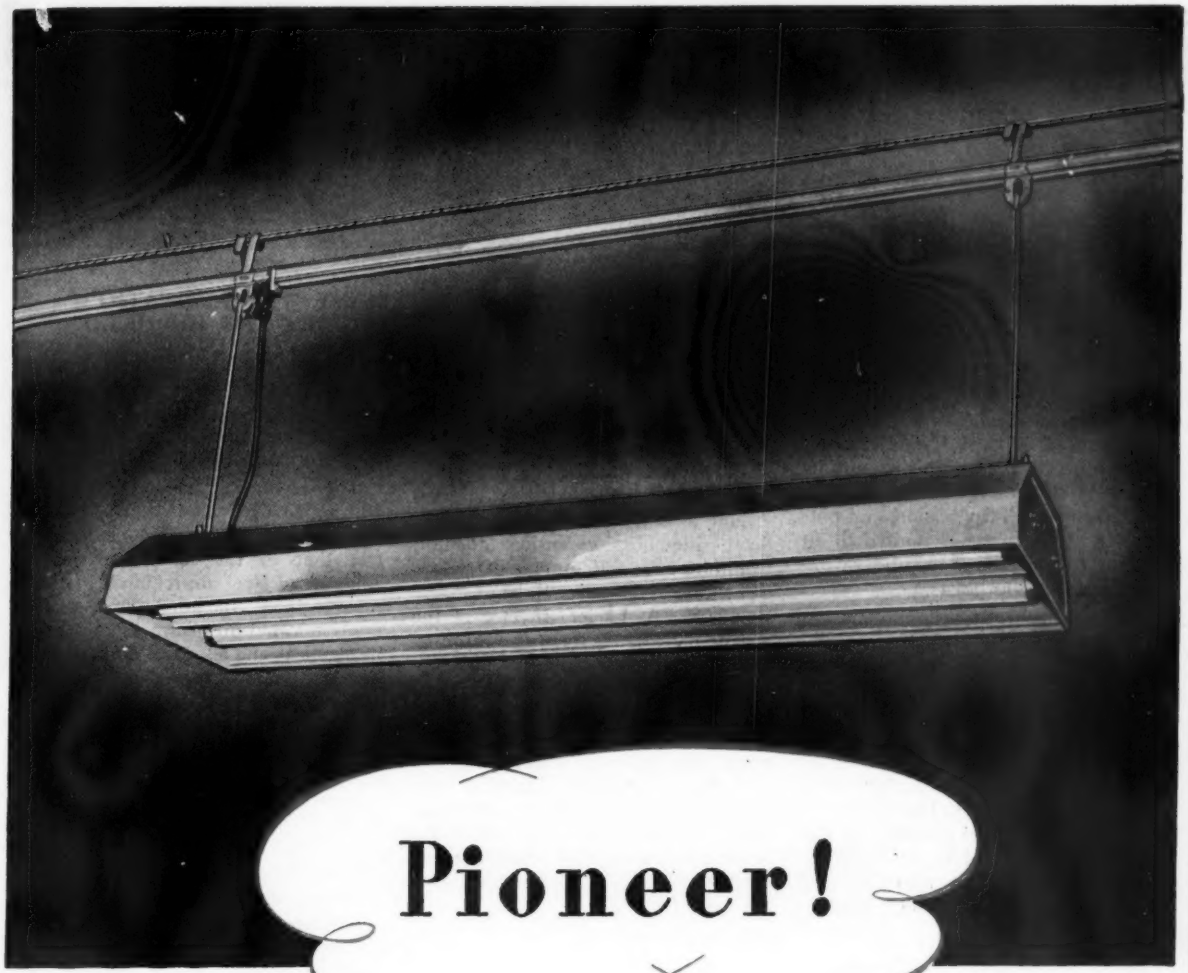
It is always best to play safe. We have seen many hazardous chances taken during the war and in many instances correction of electrical deficiences has been secured.

With only one enemy to fight now and the abundance of facilities available for handling ship repair work, it is no longer necessary to take chances. As a matter of fact, with few exceptions, it never was necessary to create active accident and fire hazards, even though rush work is somewhat carelessly done. Some of the machine tools used at ship repair plants are pipe cutting and pipe threading machines, saws for cutting metal, grinders, drills, sanders and also some woodworking tools. The industry might profit by making a study of the electrical needs for ship repair plants.

The welding conductor hazard continues to be serious and it is recom-

(Continued on page 75)

*Mr. Welman is chief electrical inspector for the Louisiana Rating and Fire Prevention Bureau, New Orleans.



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BULLDOG UNIVERSAL TROL-E-DUCT

For Completely Flexible Lighting

A thoroughly modern, flexible system of factory lighting pioneered by BullDog—already proved in vital war industries!

Light where it is needed—close to the job—helps both production *quality* and production *quantity*. With BullDog Universal Trol-E-Duct, you can add new lights or re-locate present ones without re-wiring — immediately and wherever needed.

You can even move the whole system anywhere in your plant to accommodate changes in production set-ups. It is prefabricated and built in standard sections—100% salvable, too, nothing to scrap.

Investigate Universal Trol-E-Duct for *your* plant. Adaptable to any type of lighting—fluorescent, mercury vapor or incandescent. Consult expert BullDog field engineers, or write for descriptive folders.

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ELECTRIC PRODUCTS COMPANY

SALVAGE PAPER

BOX 177, R. PK. ANNEX, DETROIT 32, MICHIGAN. In Canada: BullDog Electric Products, Ltd., Toronto. Field Engineering Offices in All Principal Cities.

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Vacu-Break Safety Switches—SafToFuse Panelboards—Switchboards—Circuit Master Breakers — BUStribution DUCT, for "plug-in" power—Industrial Trol-E-Duct, for movable "loads."

NEWS of the INDUSTRY
National and Southern

UTILITY EXECUTIVES MEET IN ATLANTA

THE TWELFTH annual meeting of the Southeastern Electric Exchange was held in Atlanta on Thursday, June 21, at the Atlanta Biltmore Hotel. Because of wartime conditions and ODT regulations, the meeting was limited to one all-day session, and out-of-town attendance was limited to 50 people—top officials of the utility companies in the Southeast.

The address of the president, R. Paul Smith, of Potomac Edison Company, Hagerstown, Md., was the opening feature of the program.

Other speakers who addressed the morning session were Frank E. Watts, of the Farm Journal, who talked on "Our Stake in Agriculture"; Merrill E. Skinner, of the Niagara Hudson Power Corp., who discussed planning for the postwar market; and E. R. Dunning, of N. W. Ayer & Son, who presented results of a second national opinion survey relating to power companies.

Edward Falck, director of the Office of War Utilities, War Production Board, was the featured speaker at a luncheon meeting. Vice-president E. L. Godshalk, of South Carolina Power Company, Charleston, presided over the afternoon session.

Those who addressed the afternoon session and their subjects were: C. Scott Fletcher, executive director, Committee for Economic Development, New York City, "Jobs in Peacetime"; W. A. Lazier, director of the Southern Research Institute, Birmingham, "Need of Research for Development of Southern Resources"; and Henry H. Startzman, manager of Power Sales, Potomac Edison Company, who spoke on "Electronics."

A dinner meeting Thursday evening brought the annual conference to a close. The guest speaker at this session was Purcell L. Smith, president of Middle West Service Corp., Chicago, Ill.

HIGH VOLTAGE CAPACITOR INSTALLATIONS—Operating at the highest voltage of any static capacitor installation, this bank of Westinghouse capacitors provides 10,000 kvar for power factor correction. Located at the Franklin Substation of the Ohio Public Service Company near a center of low power factor industrial load, the capacitors are connected directly to a 24,000 volt bus. To operate at 24 kv without intermediate transformers, six groups of nine 15 kva, 2400 volt capacitors (in parallel) are connected in series to make one leg of a phase. Each phase is star connected to form one 2430 kva, three phase unit on each of the first three structures. On the last structure, at the extreme right, the capacitors are connected in series in groups of ten in parallel in order to bring the nominal capacity up to 10,000 kva.

MANY WPB LIMITATION ORDERS ARE REVOKED

Revocation of 61 War Production Board limitation orders and schedules have been announced by the agency from May 11 to May 18, inclusive, a recapitulation made by WPB shows.

The revocation affect upwards of 200 items for civilian use. Release of these items is made possible by the fact that in the main, only small amounts of steel are required in their manufacture. Included among the items released are alarm clocks, both mechanical and electric, domestic oil burners, typewriters and cutlery.

In announcing these revocations, WPB officials said, consideration was given to the question of employment in towns where production cutbacks are anticipated, with consequent release of labor, and where it is also known that the items can be produced and employment maintained.

Among the orders revoked are the following of special interest to the electrical industry: L-74, domestic type oil burners; L-182, commercial cooking and food and plate warming equipment; L-38 and L-216, industrial and commercial refrigerating and air-conditioning machinery and equipment; L-275, alarm clocks, spring driven and electric; L-42, electric sump pumps and electric cellar drainers; L-250, electric motor controllers; L-221, electric motors and generators; L-315, enclosed safety switches, enclosed branch and service circuit breakers, service entrance equipment, panel and distribution boards and knife switches; L-273, busways, L-71, flashlights and other portable electric lights; L-39, fire protective, signal and alarm equipment; M-9-c, copper; L-78, fluorescent lighting fixtures; and L-33, portable electric lamps.

RESTRICTIONS EASED ON COPPER WIRE

Methods by which electricians, electrical contractors and certain types of repair shops may obtain copper wire were outlined recently by the War Production Board.

The amounts of wire that may be

2,389,816 vacuum cleaners needed, according to estimate based on nation-wide survey made by the Office of Civilian Requirements.

Vacuum cleaners on "must" list of 50% of national magazine's readers, survey shows.

2,161,186 vacuum cleaners estimated as accumulated demand at war's end—based on figures from 78 utilities.

4,000,000 vacuum cleaners represent backlog of demand today, national survey shows.

business that should be Yours—truly, Premier

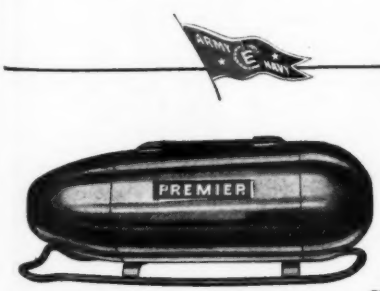
New vacuum cleaners will be bought by 22% of American home makers within one year of war's end.

New electric vacuum cleaners wanted by 1 out of every 5 families questioned in eastern area.

3,500,000 vacuum cleaners comprise accumulated American need, says economic authority in radio address.

. . . *and it will be yours,* now that buyers realize they will save $10 to $20 when they buy their next Premier—a saving made possible because this long-famous cleaner is sold by retailers only, not by manufacturers' "specialty" salesmen. Dealers, too, have learned that a Premier franchise will mean a maximum volume of profitable business, because of these established advantages that make up Premier's clear-cut, over-all policy:

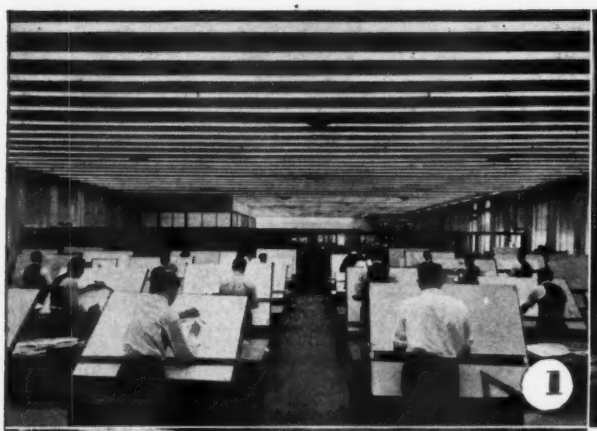
1. Selling only through retail dealers makes possible an actual saving to customers of $10 to $20.
2. 77 of the country's finest distributors, carefully selected for their geographical locations, give maximum service.
3. Forceful national advertising is designed to change the vacuum cleaner buying habits of American women by "Putting the Public Right . . . Right Into Your Store."
4. First new cleaner distribution will provide "One to Every Dealer Before Any One Gets Two"—subsequent cleaners to be distributed according to the number of customers dependent upon each dealer.
5. "Neither too many nor too few" dealers will assure a Good Business deal for every dealer.
6. Premier has been a consistent contributor of important new features, like the dramatic new Matho-Matic Nozzle.
7. 16 Factory Service-Branches, "Putting Our Service at Your Service," provide complete repairing and reconditioning service—for dealers to sell at a profit.
8. The long-famous quality and efficiency of the Premier make it truly "All That The Name Implies"—an unsurpassed electric vacuum cleaner, and an appliance that is highly profitable for you to sell.

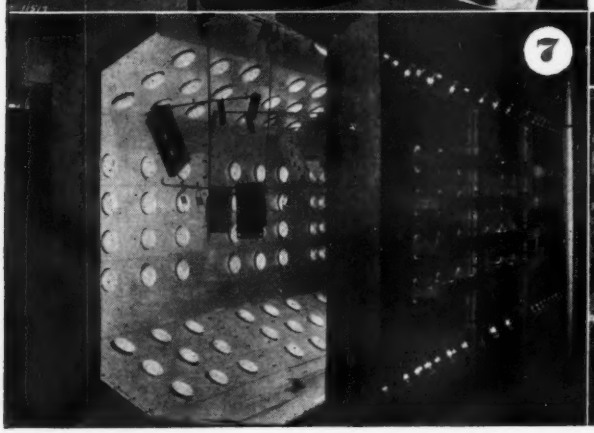


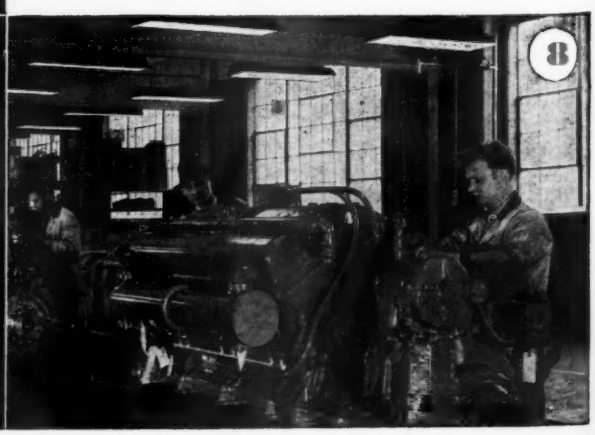
PREMIER

"All That the Name Implies"

ELECTRIC VACUUM CLEANER CO., INC. • CLEVELAND 10, OHIO







10 PROVEN IDEAS

to increase plant output with G-E Mazda Lamps

A leading wire manufacturer put in better lighting, found *production up 25%*. An electrical equipment maker installed G-E Infra-red Lamps, thus reduced drying time from *hours to minutes*. In shell manufacturing, G-E Mazda Lamps have cut inspection time — reduced eye-strain and fatigue and increased plant output.

Such results are not exceptional with engineered lighting—*plus* G-E Lamps. In the ten successful installations shown here, G-E Mazda Lamps provide high-efficiency, low-brightness illumination at low cost. You know where these ideas can help—why not put them to work?

1. Fewer mistakes in this *drafting room* because G-E Fluorescent lighting reduces shadows to a minimum.
2. *Safety hazards* are sharply reduced when G-E Mazda Lamps provide high-level illumination for safer seeing.
3. Extremely fine *detail work* moves faster, better, more accurately with abundant light furnished by G-E Lamps.
4. This *inspection* operation uses low brightness, high footcandle lighting to spot defects in steel ribbon.
5. High footcandles for close *assembly* work save rejects and reduce spoilage. G-E Mazda Lamps help do it.
6. Adequate *office lighting* with G-E Fluorescent Lamps provides better working conditions, raises morale.
7. Versatile G-E Infra-red Lamps save time—speed production in this oven *drying* installation.
8. Soft, diffused fluorescent light from G-E Lamps enables *supervisors* to maintain high standards of efficiency.
9. High *precision* depends on accurate readings. Abundant, glare-free lighting with G-E Mazda Fluorescent Lamps will make instrument reading easier.
10. With high levels of cool fluorescent light from G-E Lamps, this plant maintains *quality*, promotes cleanliness.

CONSULT your nearby G-E Lamp Office or your G-E Lamp supplier. More than 60 years of technical skill and engineering knowledge are available to solve your problems. Better call today.

"TO MAKE G-E LAMPS STAY BRIGHTER LONGER"

The Constant Aim of G-E LAMP RESEARCH

G-E MAZDA LAMPS

BUY MORE WAR BONDS

GENERAL ELECTRIC

Hear the G-E Radio programs: "The G-E All-Girl Orchestra," Sunday 10:00 p. m. EWT, NBC; "The World Today" news, Monday through Friday 6:45 p. m. EWT, CBS; "The G-E Houseparty," Monday through Friday 4:00 p.m. EWT, CBS.

purchased by electricians, electrical contractors and repairmen doing work on electrical appliances, refrigerators and commercial refrigeration and radios is explained in Controlled Materials Plan Regulation 9A. Where more wire is needed in a calendar quarter for the kinds of work permitted, WPB said, a repairman must fill out a CMP-4B application for the additional quantity needed.

Repairmen doing work primarily of an industrial nature, such as generator and motor rewinders, may write WPB in Washington for special authorization to purchase larger amounts of copper wire.

Since only a limited amount of wire may be purchased under CMP-9A, an electrician or electrical contractor is advised to determine first if a business or activity for which he is to do a maintenance or repair job is listed in the schedules of CMP-5 or 5A. If so, it may be possible to use the customer's maintenance, repair and operating supplies allotment symbol to purchase the wire needed, as described in paragraph (g-1) of CMP-5 and (h) (2) of CMP-5A.

Businesses or activities not listed in the schedules of those regulations, such as hotels, office buildings, restaurants and laundries, may not use the MRO allotment symbol. However, businesses not listed may file a WPB-541 application with the nearest WPB field office for the right to use that symbol. If granted, the procedures of paragraphs (g-1) and (h) (2) of CMP-5 and CFP-5A, respectively, will apply.

Reports from the field, WPB said, indicate that some confusion appears to exist as to what constitutes maintenance and repair. Wiring of new homes, buildings, and garages, and most wiring extensions or additions are classified as "construction" and are not maintenance or repair work, and the wire necessary cannot be obtained under CMP-9A.

PROCTOR DISTRIBUTORS RECEIVE FRANCHISES

Appropriately framed distributor franchises are being presented to all Proctor Electric Company distributors throughout the country, together with a statement of Proctor distributor policy. A ten-point program assures the distributor of the cooperation of the company in the merchandising of the Proctor line of electrical household appliances.

Among the policy points that are stressed in the franchise, the following are outstanding in their scope and appreciation of the distributor's problems:

(1) Proctor appliances will be sold only through established wholesalers. Proctor does not sell retailers on a direct basis.

(2) Full recognition is given to the necessity for adequate profit margins for both distributors and retailers.

(3) No "low profit deals."

(4) No unnecessary duplication of wholesale distribution.

(5) A guarantee of a high quality product together with aggressive advertising and merchandising policies.

(6) National consumer and trade paper advertising; planned organized selling aids for both distributor and retailer.

GE MERCHANDISING POLICY SAME AS PREWAR

C. R. Pritchard, general sales manager of General Electric's appliance and merchandise department, states that G.E.'s policy of distributing both major and traffic appliances postwar will be fundamentally identical to its prewar policy.

The department has 60 wholesale major appliance distributing outlets for G-E refrigerators, ranges, water heaters, home laundry equipment, dishwashers, Disposalls, electric sinks and kitchen cabinets.. These distributors, operating in assigned trading areas, will maintain sales organizations and local warehouse stocks at over 125 points, and will be prepared to serve the retail dealers in every city and town in the United States, Hawaii and Alaska.

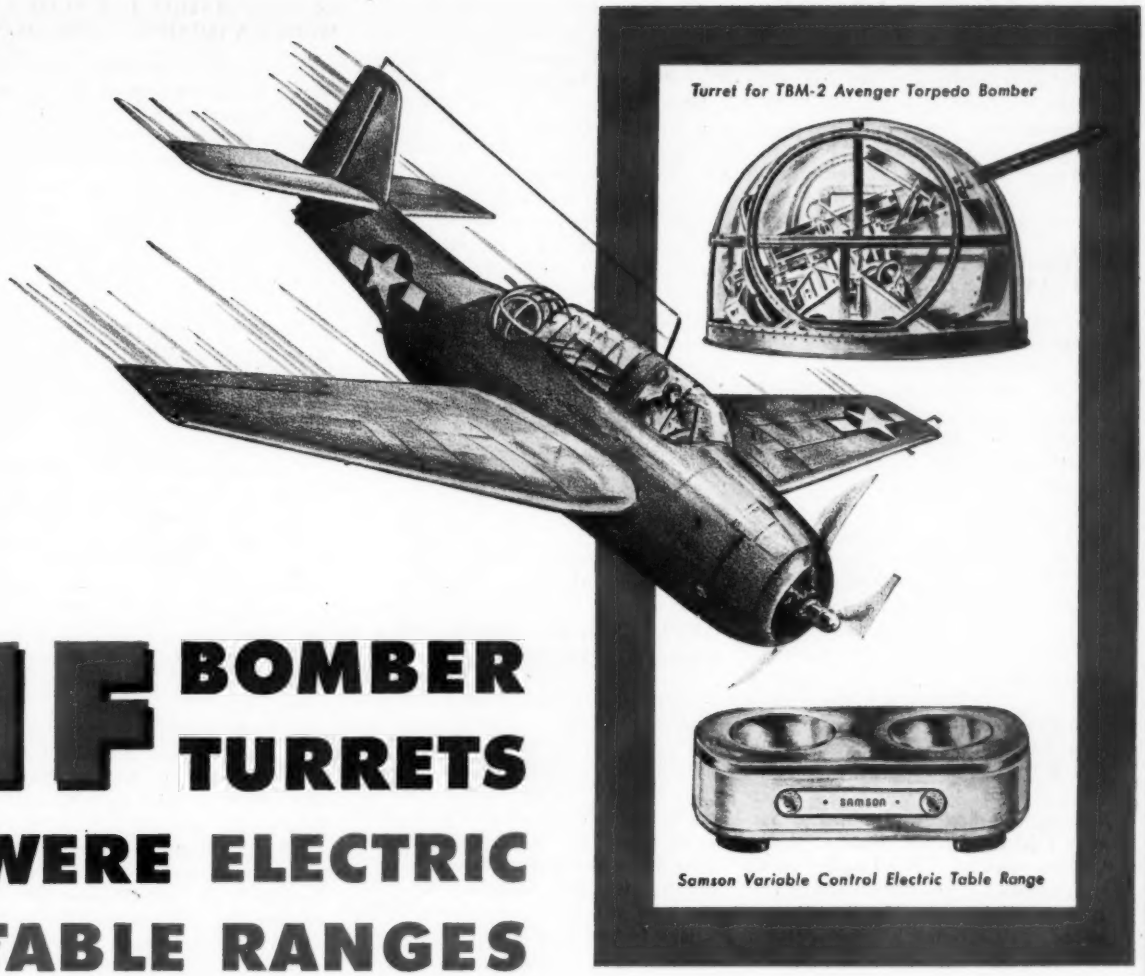
In order to extend the exposure and acceptance of items of particular interest to the plumbing trade such as dishwashers, Disposalls and electric sinks, these products will also be distributed in the United States by the Crane Company and its branches.

Better than 50 per cent of the distributing outlets will be independent wholesalers, many of whom have been with G.E. since the General Electric refrigerator was first announced in 1927. While there have been some divisions of large territories and appointments in smaller markets, G.E. will have about the same number of independent distributors as it had before the war.

The company's traffic appliances, as in the prewar years, will be distributed through multiple wholesale outlets in order to reach all types of retailers. The electrical dealer, department store, furniture store, utility outlets, jewelry, drug and hardware retailers will be served by the same type of distributing organizations that supplied them in the prewar years.

Customer buying habits determine the lines of products handled by the various kinds of distribution. For instance, drug stores are natural outlets for alarm clocks and heating pads and, of course, jewelry stores are logical

An attractively framed Proctor franchise is being presented to all Proctor Electric Company distributors throughout the country. H. S. Perkins, assistant to the vice-president in charge of sales is shown presenting a franchise to Robert Litchfield, merchandising sales manager of the Graybar Electric Company while Dan Thompson, New York District manager for the Proctor Electric Company looks on.



IF BOMBER TURRETS WERE ELECTRIC TABLE RANGES

Samson United Could Supply More Than 125,000 a Month

Of all the war items we are producing, the most elaborate, most complicated, and most exacting is the power Turret for the Avenger Torpedo Bomber. For three years we have been building it to the rigid specifications laid down by the United States Navy . . . and despite manpower and material shortages, we have met or surpassed monthly quotas of increasing volume.

If the facilities now devoted to this one war item alone were made available for peacetime manufacture, we *could*, if necessary, produce 125,000 Samson Electric Table Ranges every month!

Unlike ordinary electric table ranges, the new Samson has *variable control* that provides *graduated* heat, yet automatically maintains the temperature selected. Thus it achieves the flexibility of a gas range.

We are eagerly awaiting the day when we can again apply our mass-precision skill and resources, amplified by wartime progress, to the volume production of Samson Variable Control Ranges and many other quality electrical appliances.

ELECTRICAL SAMSON APPLIANCES

SAMSON UNITED CORPORATION, ROCHESTER 10, N. Y.
Samson United of Canada, Limited, Toronto

outlets for all kinds of clocks. Therefore, wholesale drug companies such as McKesson & Robbins, Inc., and jewelry distributing agencies are used for these products to supplement other distribution. Following this practice of distribution some G-E traffic appliances will be handled postwar as prewar, through such accounts as Montgomery Ward and Goodyear.

CONSUMER DEMANDS FOR APPLIANCES INCREASING

Consumer demand for household appliances today is far in excess of peak demand in any year prior to the war, the War Production Board's Office of Civilian Requirements reported recently from preliminary tabulations of its fourth nation-wide survey of consumer requirements.

The accumulation of demand in the last year is one of the most striking features developed by the survey, OCR said. This cumulative demand for mechanical refrigerators, sewing machines, vacuum cleaners, radios, electric irons and washing machines ranges from 25 to 100 per cent over demand reported in a similar OCR survey a year ago. In units, these percentages represent increases ranging from 1,000,000 to 2,500,000.

The survey, for which the interviewing was done by the Special Surveys Division of the Bureau of the Census, covered 4,500 families in 68 communities in 45 States and the District of Columbia. The families selected, proportionately representative of the population, were drawn from the master sample developed by the Bureau of the Census for its "Monthly Report on the Labor Force."

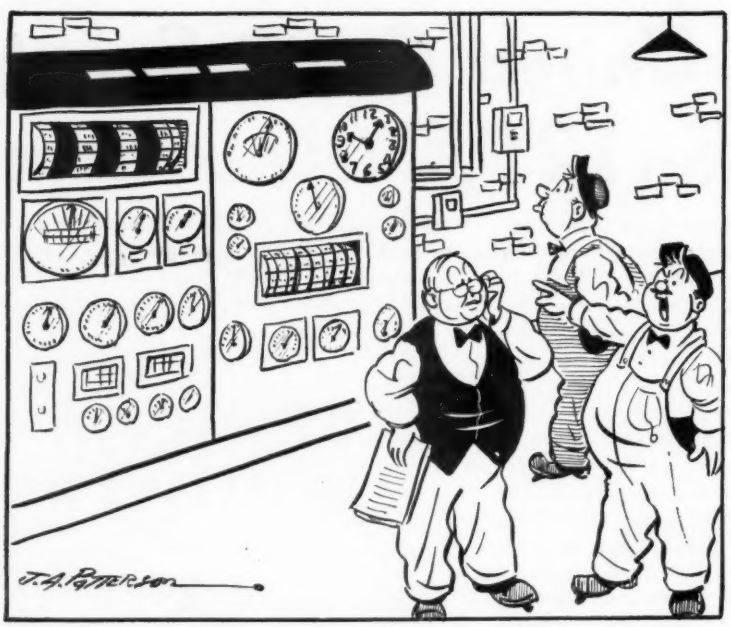
Demand shown in the following table, OCR stressed, is current demand, meaning the total of these items that people say they would walk into stores and buy today if supply were ample. These figures do not represent postwar demand, and it must be remembered that the survey was conducted before V-E Day, OCR said. The figures show only demand from households and do not include needs of apartments, new housing, etc.

April, 1945, Survey on Purchasing Intentions

Refrigerator	5,852,000
Sewing Machine	3,451,000
Vacuum Cleaners	4,501,000
Radios	5,085,000
Electric Irons	5,195,000
Washing Machines	5,835,000

APPLIANCE DISTRIBUTOR EXPANDS BUSINESS

Louis O. Bowman, Inc., 1013-17 East Cary St., Richmond, Va., wholesale appliance distributors, have purchased the property at 905-15 East Cary St. and will use the area for expansion of its business, Louis O. Bowman, president, has announced. The company will continue to use its present quarters and including the new property will have a total of 36,000 square feet of floor space.



"Whatta' ya' mean teach him to read that instrument board—th' big dope can't even read that clock up there!"

BENDIX RADIO LAUNCHES MERCHANDISING CAMPAIGN

First details of the course which the Bendix Radio division of Bendix Aviation Corporation will take in its long-planned expansion into the manufacture and marketing of AM and FM radios and radio-phonographs were revealed to the company's southern distributors in Memphis recently by Leonard C. Truesdell, general sales manager for home radio, and other factory executives.

The two-day gathering was the first in a series of Bendix Radio district distributor meetings at which company production and sales executives presented their policies and program for long range development.

Southern Bendix Radio distributors present at the Memphis meeting included sales executives of Moore-McCord, Ltd., Atlanta, Ga.; Lighting Fixture and Electrical Supply Co., New Orleans, La.; Graybar Electric Co. branches in Atlanta, Birmingham and Chattanooga; Gunn Distributing Co. of Little Rock, Arkansas; Interstate Electric Co. of Shreveport, La.; Bomar Appliances, Knoxville, Tenn.; and Florida Radio and Appliance Co., Miami, Fla. Officials of the Stratton-Warren Hardware Co. of Memphis cooperated in local arrangements for the two-day meeting.

The significant and important places in the radio and television industries of the future, Truesdell told distributors, will go to "those firms which are able to back up sound merchandising programs with products designed and engineered to incorporate progressively the latest advances in electronics, acoustics and cabinet design."

Engineering progress, coupled with advances made in simplifying and speeding mass production of highly precise radio equipment, will make possible progressively improved quality in radios in all price brackets during the years ahead, Truesdell predicted.

He told distributors that plans for steady, consistent, long-range expansion in the radio field constitute one of Bendix Aviation Corporation's most important postwar programs, and one which had been "pre-planned" for several years.

When the "chips were down" early in the war emergency, he pointed out, both the "know how" and the "show how" of Bendix Radio was and has since been mobilized 100 per cent for the development and mass production of aircraft, military and naval communications equipment in unprecedented volume.

"Bendix not only produced great

A Significant Roll Call

THE roll of Emerson-Electric Wholesalers is noteworthy, for on it appear the names of the most progressive distributors in the Electrical Industry. Their success has been founded on serving the Retailers in their territories, with profitable, quality merchandise, over a long period of years.

Emerson-Electric Fans have contributed to their success. To verify this statement, 17 Emerson-Electric Wholesalers have actively merchandised Emerson-Electric Fans 25 to 35 years; 37 Wholesalers from 15 to 24 years; and the average for all Emerson-Electric Wholesalers is 13½ years. This is an enviable record which speaks for itself.

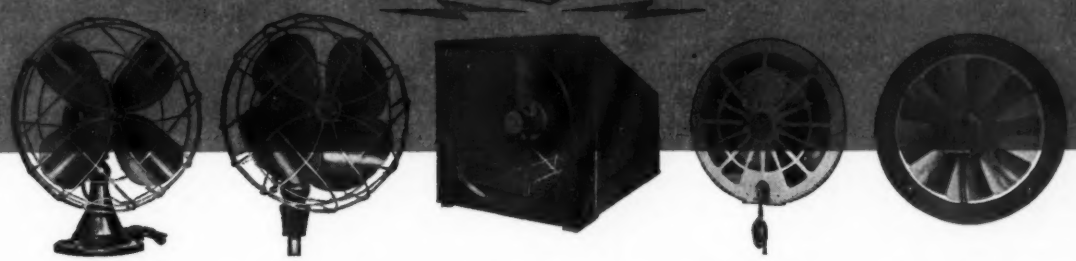
The Emerson-Electric name has been kept before the public during the war years through consistent advertising in national magazines such as Life, Saturday Evening Post, Collier's, etc.

As soon as resumption of manufacturing is permitted, these Emerson-Electric Wholesalers will be ready to serve you again with products bearing the Emerson-Electric trade-mark.

THE EMERSON ELECTRIC MFG. CO.
St. Louis 3, Mo.

Branches: New York • Chicago • Detroit • Los Angeles • Davenport

EMERSON ELECTRIC



Emerson-Electric Oscillating Fan | Emerson-Electric Stand Fan | Emerson-Electric Home Cooler | Emerson-Electric Kitchen Ventilator | Emerson-Electric Exhaust Fan

EMERSON-ELECTRIC SOUTHERN FAN WHOLESALERS

ALABAMA
Birmingham—Graybar Electric Co.
Birmingham—Wimberly & Thomas Hdw. Co., Inc.
Montgomery—Loeb Hdwe. Co.

ARIZONA
Phoenix—Arizona Hardware Co.
Tucson—Albert Steinfeld & Co.

ARKANSAS
Fort Smith—Speer Hardware Co.
Little Rock—Treadway Electric Co.

DISTRICT OF COLUMBIA
Washington—Doubleday-Hill Electric Co.
Washington—May Hardware Co.

FLORIDA
Ft. Lauderdale—McDonald Electric Co.
Jacksonville—Graybar Electric Co.
Jacksonville—Peaslee-Gaulbert Corp., Inc.
Miami—Graybar Electric Co.
Miami—McDonald Electric Co.
Miami—Peaslee-Gaulbert Corp.
Orlando—Graybar Electric Co.
Orlando—Robertson Supply Co., Inc.
Tampa—Electric Supply Co., Inc.
Tampa—Graybar Electric Co.
West Palm Beach—McDonald Electric Co.

GEORGIA
Atlanta—Graybar Electric Co.
Atlanta—Peaslee-Gaulbert Co. of Georgia, Inc.
Augusta—The Motor Supply Co., Inc.
Brunswick—The Motor Supply Co., Inc.
Savannah—Graybar Electric Co.
Savannah—The Motor Supply Co., Inc.

KENTUCKY
Louisville—Peaslee-Gaulbert Corp., Inc.

LOUISIANA
New Orleans—Electrical Supply Co.
New Orleans—Lighting Fixture & Electric Supply Co., Inc.
Shreveport—Interstate Elec. Co. of Shreveport, Inc.

MARYLAND
Baltimore—Dorman Electric Supply Co.
Baltimore—Lee Electric Co.
Hagerstown—Graybill's, Inc.

MISSISSIPPI
Jackson—Cabell Electric Co.
Jackson—Orgill Bros. & Co.

NEW MEXICO
Albuquerque—Charles Ilfeld Co.

NORTH CAROLINA
Asheville—Graybar Electric Co.
Charlotte—Graybar Electric Co.
Durham—Graybar Electric Co.
Greensboro—Electric Supply & Equipment Co.
Winston-Salem—Graybar Electric Co.

OKLAHOMA
Oklahoma City—Cook Electric Supply Co., Inc.
Oklahoma City—Peaslee-Gaulbert Corp.
Tulsa—Electric Supply Co.
Tulsa—Nelson Electric Supply Co.

SOUTH CAROLINA
Charleston—Butts Electrical Supply Co.
Charleston—C. D. Franke & Co., Inc.
Columbia—C. D. Franke & Co., Inc.
Columbia—Graybar Electric Co.
Greenville—Graves Electric Supply Co.

TENNESSEE
Chattanooga—Graybar Electric Co.
Kingsport—Kingsport Electric Co., Inc.
Knoxville—Graybar Electric Co.
Knoxville—Tennessee Mill & Mine Sup. Co.
Memphis—Graybar Electric Co.
Memphis—Orgill Bros. & Co.
Nashville—McWhorter, Weaver & Co.

TEXAS
Amarillo—Nunn Electric Co.
Corpus Christi—Corpus Christi Hdwe. Co.
Dallas—The Beckett Electric Co.
Dallas—Peaslee-Gaulbert Corp.
Dallas—Smith-Perry Electric Co.
El Paso—Car Parts Depot, Inc.
Fort Worth—Smith-Perry Electric Co.
Houston—Peaslee-Gaulbert Corp.
Houston—Reichardt Electric Co.
San Antonio—Peaslee-Gaulbert Corp.
San Antonio—Southern Equipment Co.
Wichita Falls—Nunn Electric Co.

VIRGINIA
Norfolk—Graybar Electric Co.
Norfolk—W. M. Reay & Co., Inc.
Richmond—Graybar Electric Co.
Richmond—Richmond Hardware Co.
Roanoke—Graybar Electric Co.

WEST VIRGINIA
Charleston—Charleston Electrical Supply Co. Inc.
Huntington—Emmons-Hawkins Hardware Co.
Parkersburg—The W. H. Smith Hardware Co.

quantities of communications radio equipment in its own plants, but also showed other radio manufacturers how to produce precision radio equipment by mass production methods which definitely pointed the way to better quality and lower costs," he stated.

Potentialities and future opportunities for new improvements in reception and tone qualities of radio and phonograph units for the home offer a similar challenge to the creative engineering ability and manufacturing resourcefulness which the company is mobilizing as "plus-factors" in the radio field, he said.

Truesdell announced that Bendix has completed appointment of distributors in territories covering nearly 100 per cent of the national potential market.

He urged distributors to get under way now with plans for building their selling and dealer organizations in preparation for the selling rush that will begin when products are available.

Truesdell stressed the importance to distributors of sufficient display, office, warehouse and service department space and emphasized the value of convenient and attractive display rooms and sales meeting rooms.

Large scale sales training programs will be a "must" in most distributor and dealer selling organizations in order to revitalize selling and merchandising campaigns to meet the stepped-up tempo of tomorrow, Truesdell pointed out.

UNITED DISTRIBUTORS, INC. ORGANIZED IN NEW ORLEANS

O. G. H. Rasch, has organized the United Distributors, Inc. with sales rooms and office at 539 Carondelet St., New Orleans, Louisiana. This new firm is an exclusive wholesale distributor for Majestic radio and records, Frez-all home freezers, McAllister vacuum cleaner, "Kitchen Maid"—the founder of modern kitchen units, washing machines, gas ranges and heaters, toys, housewares, furniture, electrical and industrial supplies.

Mr. Rasch has had many years practical experience as a wholesale distributor, and he is the author of a book on manpower development entitled "Men Wanted" which is widely used as a manuel by large chain organizations. He has written numerous articles for business magazines and lectured on management problems. Julius L. Rosenblum is associated with Mr. Rasch as executive vice-president in the overall management, policies and sales. Other members of the United Distributors Organization are Al Levin, vice-president and merchandise manager, J. Bruce Barousse, territory supervisor, Earl Ford, sales promotion manager, Henry Develle, Jr., dealer relations, L. Deidrich, stock and service supt., and M. Denis, office manager.

APPLIANCE CO. EXPANDS ELECTRICAL DEPARTMENT

The electrical department of The Chas. S. Martin Co., Athens, Ga., has been acquired by the Roberts Electrical Appliance Co., 255 Lumpkin St., Athens, Ga. The new company will be under the same management and will handle the same type work with the addition of major electrical appliances.

The company will handle electrical wiring, service and repairs and sales of lighting fixtures and such appliances as available. A full line of ranges, water heaters, washing machines and similar items will be on hand when available.

WIREMOLD SALESMEN MEETING AT FACTORY

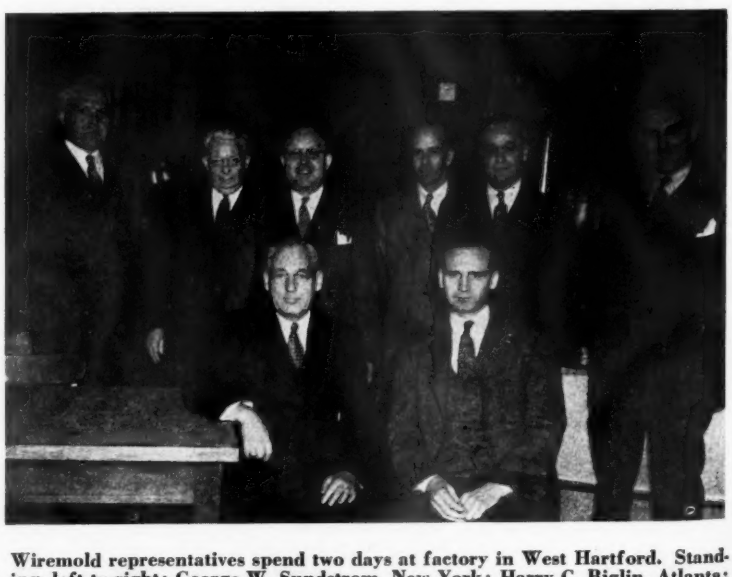
In order to work out the best way to get war work and essential civilian high priority orders meshed into the production schedule for the next few months, The Wiremold Company held a two-day meeting with a group of field representatives at the factory in West Hartford. Many valuable suggestions for improvements and changes were made by the district managers who have years of practical experience in laying out Wiremold wiring systems and who are constantly keeping abreast of new applications developed during the war.

The men from the field are in close touch with the problems of customers, and after a thorough study of conditions at the factory, they will be even better able to help distributors take care of orders in sequence of importance. Many things learned at Wiremold from the war will be very useful in peace.

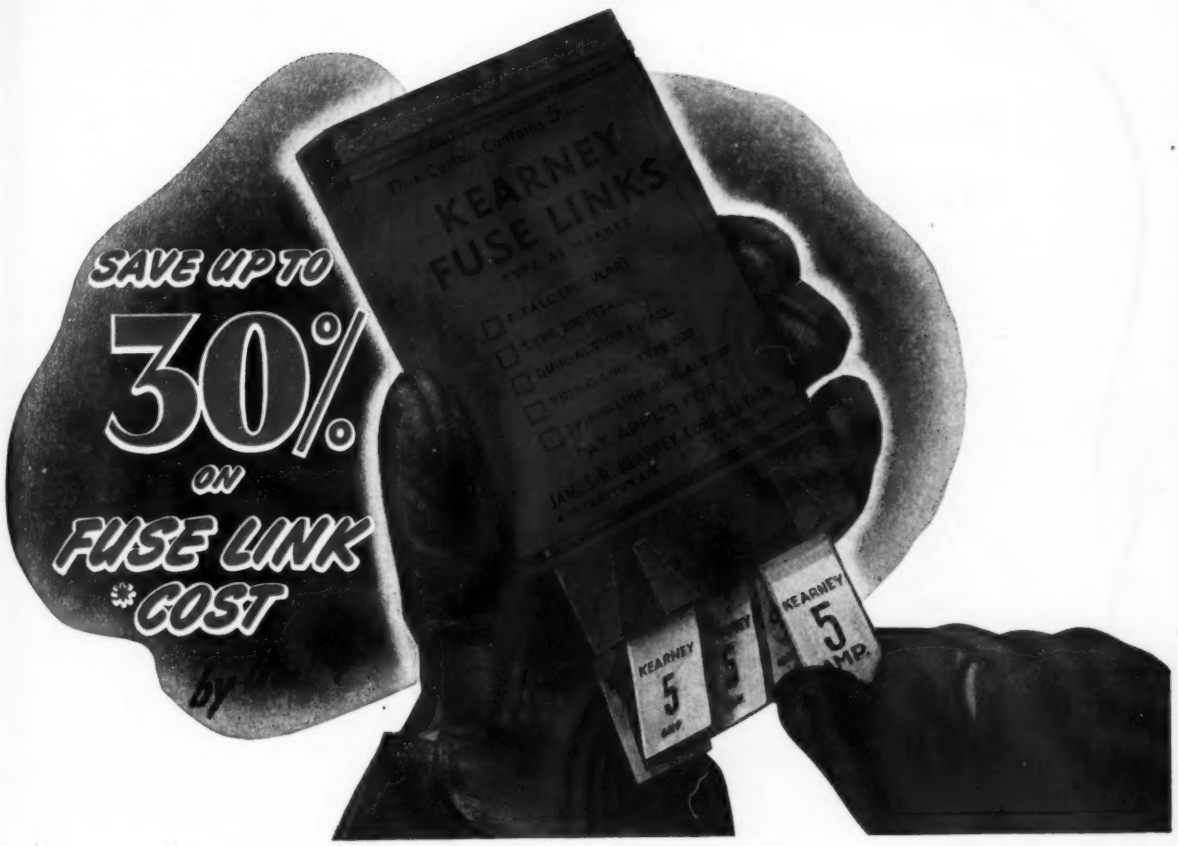
POSTWAR SERVICE BUSINESS TO INCREASE 60 PER CENT

A sound past and an extremely bright future for the radio service industry which in postwar years will sell 60 million tubes through 30 thousand shops, employing 90 thousand men, were revealed as a result of a national survey of set owners and repair men announced recently by Sylvania Electric Products Inc. Among the other findings of the survey were that the public is almost unanimous in its high opinion of the radio serviceman, that before the war servicemen completed some 30 million repair jobs per year, selling 30 million tubes in the process.

Analyzing the results of the survey, which is the second in a continuing series on the radio industry, Frank Mansfield, Sylvania's director of sales research, said that there were approximately 24,700 radio service establishments in the United States today, employing 60 thousand people with specialized skills unknown twenty-five



Wiremold representatives spend two days at factory in West Hartford. Standing, left to right: George W. Sundstrom, New York; Harry C. Biglin, Atlanta; Edward Rigby, Boston; John Davis Murphy, vice-president; J. E. Love, Pittsburgh; Edward W. Robotham, advertising counsel. Seated, left to right: Walter S. Beckett of Philadelphia, and Ambrose Judd Massey of Chicago.



KEARNEY PUL-TAB FUSE PAKS!

KEARNEY PUL-TAB FUSE PAKS save time and money because:

1. Individual bags prevent tangling and keep out dirt.
2. Visible identification tabs assure quick, accurate fuse selection.
3. You pull out only the fuse you need — the others are fastened and can't drop out.
4. Flat, compact package —5 links to a Pak— easy to stack or hook on lineman's belt.

KEARNEY FUSE LINK DISPENSER

The Right Fuse at The Right Place at The Right Time

Kearney visible Pul-Tab Fuse Paks save time and deliver a fresh, individually wrapped KEARNEY FUSE LINK for each job with assurance that its original precision has not been destroyed due to tangling, bending, dropping or other forms of rough handling or abuse.

A Kearney Fuse Link is handled just once—when it's needed to do a job!

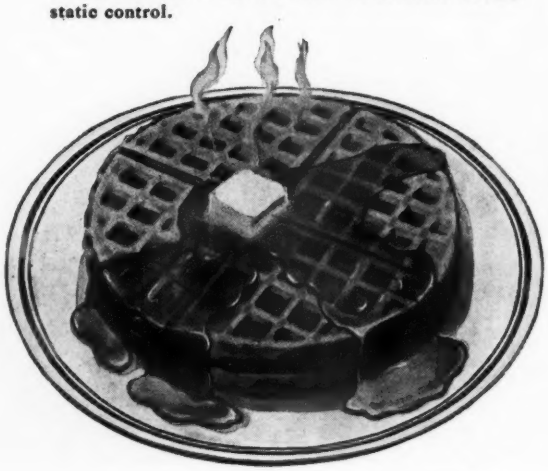
**Figures show as high as 30% fuse link loss with old-time bulk packaging.*

JAMES R. KEARNEY CORPORATION

4224-4242 CLAYTON AVENUE . . . ST. LOUIS, MISSOURI

Newsworthy waffle!

Umm-m-m . . . good! Very good indeed was the first waffle to come from a Proctor waffle iron. Because Proctor had made the *first* automatic waffle iron, *first* Glow Cone signal light, *first* "OFF" switch on the waffle iron control dial. And like other Proctor appliances, that first waffle iron featured accurate thermostatic control.



But the best news is still to come!

Look for newsworthy improvements in the whole line of Proctor appliances after victory. They're on the way! Meanwhile, "back the attack" with war bonds.

PROCTOR

NEWSMAKER **IN APPLIANCE MERCHANDISING**

PROCTOR ELECTRIC CO.—*DIVISION* OF PROCTOR & SCHWARTZ, INC., PHILA. 40, PA.

years ago. Re-affirming the fact that radio servicemen know their business, Mr. Mansfield said the surveys being conducted by his company indicate not only that the public is well satisfied with wartime radio service but that over 90% of all repair men today frequently modify circuits due to wartime scarcities. However, nine out of every ten changes made by servicemen are successful, in spite of the complexity of the modern radio receiver.

Getting down to the technical facts of radio repairing he said about 40% of all radio repairs can be made with either tubes alone, with mechanical or electrical parts alone, or labor alone; 36% requiring only two of these factors; 17% requiring three; and only 7% requiring four. Stated in other words, 52% of all repair jobs require tubes; 63% require electrical parts; 31% require mechanical parts, and 44% involve labor.

Mr. Mansfield reported that servicemen generally attribute the need for service to the failure of seven specific components which he named in the following order of importance: tubes, condensers, power supplies, tuning systems, IF coils, RF coils, and filters. But while tubes are most frequently needed for radio servicing they are not affected by humidity which was cited as a major cause for radio servicing in an average of 44% of the sets serviced throughout the nation. Humidity as a cause of trouble varies in importance in different parts of the country. Measured in terms of sets serviced, it has been reported as follows: Pacific States 22%; East North Central States 28%; South Atlantic States 61%; and Gulf States 87%.

Mr. Mansfield predicted that there will be 75 million home radios and 25 million automobile radios in use 5 to 6 years after the end of the war. This will mean that there will be an increase of about 5,500 radio service establishments and an increase in employment of about 50%. Stressing the need for more and better equipment for radio servicing he also predicted that this trend will become more urgent with the widespread acceptance of record players, FM and television. To meet these future tube replacement needs he estimated that 60 million tubes annually will be required as compared with 34 million in 1941.

REVERE ELECTRIC MOVES TO NEW BUILDING

Revere Electric Manufacturing Company has recently purchased a large two story structure at 6009-17 Broadway, Chicago 40, Illinois, and

after extensive alterations, will move their manufacturing departments and offices to that address.

In announcing the move, Van N. Marker, president of the company, stated that the floor area is almost double the present space occupied, and will permit added facilities for expansion for the postwar era. The new plant and offices will be occupied approximately June 1st. Revere Electric Mfg. Company is popularly known as the "originator of the hinged floodlight pole"—the line comprising floodlights and equipment for service stations, industrial, sports, marine, and airport lighting.

HOTPOINT APPLIANCE PRICES NEAR '42 LEVELS

Prices of the Hotpoint line of major appliances will be within 10% of the 1942 prices when they first reappear after reconversion starts, and full production of the electric ranges, water heaters, electric dishwashers, and garbage disposal units will probably be reached nine months after the go signal is given, Ward R. Schafer, vice-president in charge of sales, Edison General Electric Appliance Company, disclosed in an article published recently in Advertising Age.

Because of war production commitments, and shortage of motors and material, the company's refrigerators will not reach the market for six months after reconversion begins and will not go into full production for an additional six months.

STROMBERG-CARLSON DISTRIBUTORS APPOINTED

Clifford J. Hunt, manager of radio sales of the Stromberg-Carlson Company, has announced the appointment as area distributors for the company's postwar radio, FM and television line, the well-known distributing firm of Clark & Jones of Birmingham, Alabama. The Aalabama area, marketing authorities say, is expected to offer one of the South's richest postwar trading areas. Mr. Hunt pointed out that the Alabama distributing firm named to represent the fifty-one year old communications firm has strong roots in the business life of the South.

Clark and Jones trace their commercial history to their founding in 1898 by H. S. Jones, Senior, whose son, H. S. Jones, Jr., is one of the three firm executives today. The firm, which will celebrate its forty-seventh birthday soon, is known for the thoroughness and consistent high quality of its service to the dealers in this territory. Their concentration upon

Chromy says:

"The Fit makes a Hit!"

For *all* Electric Ranges

"It's always a perfect fit" when you replace with CHROMALOX *Superspeed* and *Heatflo* Units. The CHROMALOX Snap-on Adaptor Ring does it...for CHROMALOX Adaptor Rings—installed in a jiffy—stay snug and tight.

More profit too with CHROMALOX units. A small inventory of *Superspeeds* and *Heatflos* plus inexpensive Snap-on Adaptor Rings, service all makes of Electric ranges. Less manpower, time and inventory means more profit to you per call.

Write for Bulletin CF-145 showing CHROMALOX *Superspeed* and *Heatflo* Range Units which are available for immediate replacement.

These famous CHROMALOX *Super-speed* and *Heatflo* units are the result of twenty-five years continuous research and engineering in the field of electric heat under rigidly maintained standards of excellence.

Edwin L. Wiegand Co.

7600 Thomas Blvd. **Pittsburgh 8, Pa.**

C. B. Rogers, 1000 Peachtree St., N.E., Atlanta, Ga.
L. R. Ward Co., 403 Southland Building Annex, Dallas 1, Texas
932 M & M Building, Houston 2, Texas
W. R. Phillips, P. O. Box 2561, Raleigh, N.C.

on new ranges and for replacements

CHROMALOX

means *Electric Cooking at its Best!* RC-5

"famous brands" of the caliber of Stromberg-Carlson is another reason attributed by Mr. Jones for the continued success of the firm.

* * *

Keynoting the announcement by the Stromberg-Carlson Company that his firm had been appointed area distributors for the company's radio, FM and television line, W. H. Forgy of Byars-Forgy, Inc., noted Tampa, Fla. distributing firm, laid plans to expand the firm's postwar sales and service forces. The firm's territory takes in 38 counties in northern, western and central Florida.

Headed by Mr. Byars, company president, the sixteen-year old distributing firm is also a distributor for products of General Motors Frigidaire Division.

NEW DISTRIBUTOR FOR LEAR HOME RADIOS

Announcement has been made by Nate Hast, merchandise manager of Lear Home Radios, of the appointment of Wood Distributing Company as distributor of Lear home radios in Eldorado and Little Rock, Arkansas.

FLORIDA POWER & LIGHT COMPANY EXPANSION PLAN

Convinced that Florida's postwar growth will result in new spectacular population gains for the state, Florida Power & Light Company will start immediate construction of a large new steam-driven electric generating station at Riviera just south of the ship terminal of the Port of Palm Beach. This latest link in the company's state-wide expansion plan will include the largest turbo-generator yet installed in the company's system.

President McGregor Smith of the company, in making the announcement, pointed out that the company had already started work on a new steam electric plant in Sarasota and that other expansion proposed includes the building of 800 miles of transmission and distribution lines.

In outlining the equipment of the new West Palm Beach plant, Mr. Smith said that the huge turbo-generator will have a normal capacity of 58,500 hp and can produce up to a maximum of 67,000 hp.

The plant will be located on the western bank of Lake Worth, where there is an abundance of water for condensing purposes. Modern, high-pressure, "outdoor" type boilers will be used. Size of the job was indicated by engineers' estimates that it will take months to complete. The station is scheduled to go into operation during 1946.

WESTINGHOUSE TO MAKE UPRIGHT HOME FREEZER

Upright home freezers for city and farm use with front-opening doors and sectional inner doors for easy food storage and removal, will be manufactured by the Westinghouse Electric Appliance Division shortly after civilian production of electric appliances is resumed, T. J. Newcomb, sales manager, announced.

"This upright design, in contrast to the horizontal models now commonly in use in food stores, will make the new home freezer the companion piece to the household electric refrigerator in size and finish and will provide the same reach-in convenience of the refrigerator," said Mr. Newcomb.

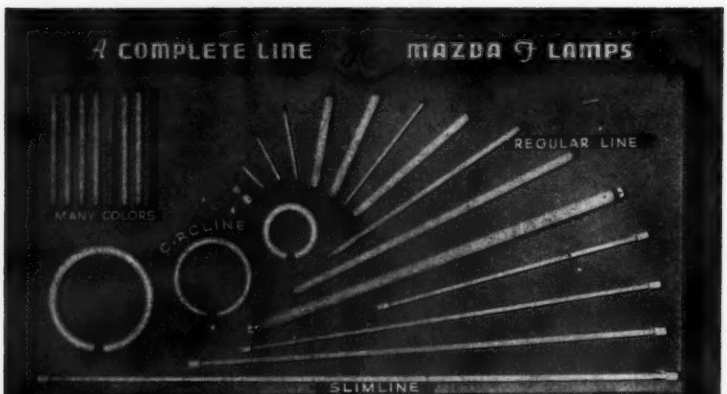
"Since the cabinet will occupy no more floor space than a refrigerator of comparable size," he continued, "it can be located in the most convenient place in the home."

The Westinghouse home freezer will be produced in three models, starting with a six cubic foot size, to meet both urban and farm requirements. The two functions of freezing and storing foods will be done separately in all models.

"Sectional inner doors and shelves," Mr. Newcomb pointed out, "make it possible to select specific foods from an individual section of the cabinet without disturbing food arrangements or temperatures in other sections. Zero temperature is maintained in storage compartments. On the freezing surfaces, temperatures range from 10° to 20° below zero.

"Defrosting," Mr. Newcomb said, "will be as easy, but far less frequent than defrosting an electric refrigerator and it will not be necessary to remove foods from the storage sections. Actual home tests of the new home freezers show that users open their cabinets on an average of only once or twice a day, or less in a month than the average domestic refrigerator is opened every day, and defrosting therefore need be done only once every six to nine months."

The new upright home freezer will, like the domestic refrigerator, have a hermetically sealed system. Thus, service will be simplified to a point comparable to household refrigerator servicing.



COMPLETE LINE OF G-E LAMPS ON DISPLAY

Pictured here is a new striking display, featuring the complete line of G-E Mazda fluorescent lamps—26 in all, recently put on public exhibit at General Electric's Lighting Institute, Nela Park, Cleveland.

Of special interest to visitors are the F-lamp types in GE's "circline" and "slimline" classifications.

Two of the three circline lamps shown on the panel are facsimiles of circular G-E Mazda F lamps yet to be produced. With these two exceptions, all other elements in the display are wired to permit a convincing demonstration of how all these F-lamp lighting tools appear when lighted.

Novel lamps in the "regular line" include a small pear-shaped 4-watt type for instrument dials of fighting planes, a 4-watt 6-inch tubular type for similar needs, and a new 13-watt 21-inch tubular lamp for a variety of applications.

The Institute exhibit shop reports that, because of wartime conditions, it is unable to provide duplicates of this lamp display. The panel, however, is suggested as a pattern for agents and others wishing to construct a similar display for their demonstration needs.

"Our home freezers," Mr. Newcomb continued, "are tested in the laboratory under home conditions for both mechanical performance and ability to freeze and store foods. Some of the engineering tests on the cabinets are conducted in special copper-lined humidity rooms. The refrigeration mechanism itself is being subjected to rigid tests in a soundproof room mounted on giant springs at our East Springfield, Mass., plant, where units for all home freezers will be built.

"The Westinghouse Home Economics Institute, under the direction of Mrs. Julia Kiene, tests the freezers from the homemaker's point of view for their proper care and use and prepares information on how to freeze, store and package fresh and cooked foods," he pointed out.

"Research on frozen foods has been conducted by the Institute for the past three years. The staff conducts extensive tests on different methods of freezing and varying storage periods; different lengths of time and methods of scalding vegetables; ways of processing and wrapping fruits to prevent oxidation and dehydration, and methods of wrapping all types of foods."

WASHER MANUFACTURERS EXPECT RECORD YEAR

The multi-million dollar household washing machine industry, which has placed its products in more than three-fifths of the wired homes in this country anticipate an enlarged market promising annual output that will top its record year, 1941, by 50 per cent.

"We will hit new highs as quickly as the industry can get rolling in dead earnest," said Louis C. Upton, head of the Nineteen Hundred Corporation, St. Joseph, Mich., and president of the American Washer and Ironer Manufacturers' Association.

"The 'go-ahead' signal, given recently by the War Production Board's removal of all restriction on materials, facilities and manpower, not only for washers but also for driers and ironers, the companion household cleanliness equipment, means resumption of output by an industry which in 1941, its last full production year, turned out more than 2,300,000 units with a total retail value close to $175,000,000," Mr. Upton said.

Simultaneously he gave warning that "the American housewife, who has kept her washing equipment going through thick and thin during the war period, must not expect replacements for her wornout applications by tomorrow noon."

WHEN NOTHIN'S COOKIN'

REPLACE WITH TK

TK REPLACEMENT UNITS ARE AVAILABLE NOW TO FIT ANY ELECTRIC RANGE

When your customer—Mrs. Housewife—calls and says, "Supper's on the stove but nothin's cookin'"—it's time for you to replace the burned out unit with a TK replacement unit assuring long life, economy and trouble proof operation. Every TK replacement means a loyal friend for your firm.

MAIL COUPON NOW FOR NAME OF YOUR NEAREST DISTRIBUTOR

TUTTLE & KIFT INC.

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Gentlemen: please send me name and address of nearest TK distributor. No obligation.

FIRM NAME _____

ADDRESS _____ CITY _____

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ELECTRIC PRODUCTS
FOR THE CONTROL OF LIGHT AND POWER
SERVICE EQUIPMENT
All Sequences and Types for the Various Utility Requirements.
INDUSTRIAL CONTROLS
For Motors up to 30 H.P.
CONTACTORS AND RELAYS
From 1 to 100 Amperes.
MULTI-BREAKERS
For Home Lighting and Small Motor Circuits. Types MO, M, MB, M1, M2.
SAFETY SWITCHES
In Types A, C, D from 30 to 1200 Amperes Single and Double Throw.
TYPE AB-1 CIRCUIT BREAKERS
For AC and DC Lighting and Power Circuits.
METERING EQUIPMENT
Socket Type and Other Standard Designs of Metering Equipment.
PANELBOARDS
For Light and Power Distribution—Fusable and Circuit Breaker Types.
FEDERAL ELECTRIC PRODUCTS COMPANY, INC.
Executive Offices: 50 Paris St., Newark 5, N. J. • Plants: Hartford, Conn., Newark, N. J.
Manufacturers of Motor Controls, Safety Switches, Circuit Breakers, Service Equipment, Panelboards

"The WPB proposed level of manufacture, 350,000 washers each in the third and fourth quarters of this year, is a gratifying figure at which to aim, but output is dependent on ability of the industry to obtain materials without interfering with their use for war purposes," Mr. Upton said. "It will be three to six months before the industry as a whole is rolling out washers, ironers and driers in quantities that will be really noticeable in the stores."

Estimates of the pent-up demand for washers range as high as 5,835,000, it was declared. The immediate market for ironers is placed at 1,300,000.

WESTINGHOUSE TO SPLIT STOCK AND CHANGE NAME

Stockholders of the Westinghouse Electric and Manufacturing Company at their recent annual meeting voted to split the company's stock on the basis of four shares for one and also to change the company's name to Westinghouse Electric Corporation, for simplicity and brevity.

Purpose of the stock split, explained A. W. Robertson, chairman of the company, is to broaden the base of Westinghouse ownership by making the stock available at a lower price.

Authorized capital stock of the company today is 4,000,000 shares, consisting of 80,000 shares of preferred and 3,920,000 shares of common, of which 79,974 shares of preferred and 3,132,816 shares of common are outstanding, all with a par value of $50.00.

Total authorized shares of the new stock will be 16,000,000 of which—on the four-for-one basis—319,896 shares of preferred and 12,531,264 shares of common will be outstanding. Par value of the new stock, both preferred and common, will be $12.50.

WIRING STANDARDS NEARING COMPLETION

Excellent progress is being made in revising the standards for adequate wiring in homes and on farms.

The sub-committee doing the job met recently and reviewed in detail the latest drafts. These are being revised without delay in accordance with the findings of the sub-committee for submission to the Industry Committee which will review and subsequently present them to the ten national organizations sponsoring the project.

The whole group of standards will be in several sections and it is proposed that the two sections now being revised be entitled, respectively,

"Handbook of Residential Wiring Design" and "Handbook of Farmstead Wiring Design." H. R. Stevenson of Detroit Edison Company and Morris Lloyd of Niagara, Lockport and Ontario Power Company are, respectively, chairmen of the Technical Sub-Committee of the Industry Committee responsible for the detail work.

In its presently recommended form and arrangement the Residential Handbook differs considerably from the original one. It will be more convenient to use and easier to apply because of the clear distinction drawn between requirements and recommendations.

The Farmstead Wiring Standard will be the outcome of extensive investigation and much study. As a pioneering effort it will be divided into two parts—one covering wiring for light and power in all types of farm buildings, while the other discusses the outside distribution system on the farm. It gives promise of being a most important contribution to the forwarding of more complete electrification of our farms.

REA FAVORS COMPETITIVE CONTRACT PROCEDURE

REA has recommended that its borrowers use competitive contract procedure in major power line construction under WPB's recent modification order permitting building of extensions requiring under $25,000 in material.

William J. Neal, acting administrator of the Rural Electrification Administration at St. Louis, in a communication addressed to REA borrowers, said: "Our experience indicates that in a big construction program most cooperatives will build extensions more rapidly and more economically by letting the construction to contract."

The REA borrowers have over $100,000,000 of interrupted or postponed construction on which they have resumed operations, and in addition REA is already approving loans from the $80,000,000 approved for the fiscal year beginning July 1. The Lucas Bill, which would provide $520,000,000 more for REA loans in the next three years, has passed the Senate and gone to the House of Representatives.

While "labor only" contracts have been sanctioned by REA during the past two years because of the abnormal materials situation which prevailed, he pointed out that this type of contract is less competitive, and as a rule more expensive.

On the level, many a Swami is playing to standing room only these days, as folks get itchy about the *when* of postwar, and how to be ready the day it comes. But if you're serious (and who isn't), the answers to your future are in your own business past.

Remember the new faces that popped up in the fan field every now and then? (Anybody's guess is good on how many will come down the pike with peace.) Remember the names that stayed to do a real job with honest merchandise, honestly priced, with honest-to-goodness advertising and sales support for you? We're sure you do. We're equally certain that, when fans can be produced again, you'll want more of those Robbins & Myers sales-proved, low-priced models that made their bow just a year before Pearl Harbor. You'll want to cash in on the brand-new, *de luxe* R & M beauties and the new high-dollar-volume line of R & M portable home coolers and attic fans as well.

All this profitable postwar merchandise will be fairly distributed among all our dealers. For our 67 years of business have demonstrated that an honest deal is the only kind that lasts. Of that we're doubly certain. For our dealers have demonstrated it, too.

A *Look* into Tomorrow

IF you have any problems involving electric fans, if you need repair parts for R & M fans or want complete repair jobs done *for* you—get in touch with us at Springfield, Ohio, or at the nearest R & M branch office listed below.

New York.....200 Varick St. Philadelphia.....401 N. Broad St.
Chicago.....2400 W. Madison St. San Francisco.....237 Rialto Building
Dallas.....1100 Cadiz St.
Kansas City, B. M. A. Bldg...Room 325, 215 Pershing Rd.
The Robbins & Myers Co. of Canada, Ltd.....Brantford, Ont.

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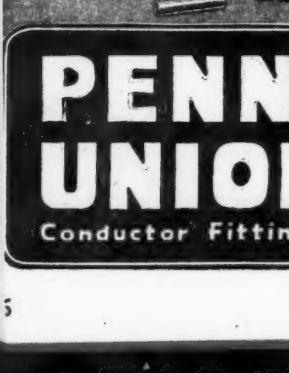
MOTORS · HOISTS · CRANES · MACHINE DRIVES · FANS · MOYNO PUMPS

You always find the
EXACTLY RIGHT
Terminal Lug—

in the COMPLETE line
You'll see ALL good types of terminals in the Penn-Union Catalog. Shown above is the EZ; below are a few pictures giving an idea of the wide variety:

All good Pressure and Solder Terminals

Sheet Metal Terminals—Hundreds of Types



Also Tees, Taps, Straight Connectors, Grounding Clamps, etc., etc., thousands of items. And every one is Dependable, mechanically and electrically. Penn-Union fittings are the first choice of experienced users.

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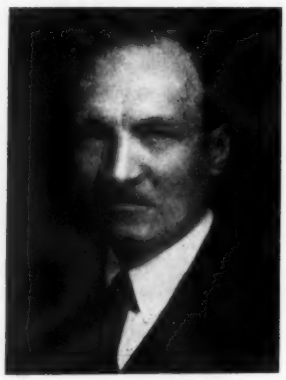
PERSONAL NOTES
About Men You Know

Preston S. Arkwright, president of the Georgia Power Company, was elected chairman of the company's board of directors, and **William E. Mitchell**, vice-president and general manager, was elected president at a meeting of the board of directors on May 15th. Mr. Mitchell is in Europe on an assignment from the Secretary



W. E. Mitchell

of War and will return in about three months. He is president of the Atlanta Chamber of Commerce.

Mr. Arkwright also announced that **C. B. McManus**, assistant operating manager of the company, was elected a member of the board of directors and was appointed assistant to the new president.

Mr. Arkwright has served as president of the company since 1902. In that year, the Georgia Railway and Electric Company was formed as the result of a merger of several competing street railway companies and the local electric light company. H. M. Atkinson, founder of the new business, selected Mr. Arkwright as president of the enterprise by reason of the latter's services as his legal adviser.

Mr. Mitchell has been connected with the Georgia Power Company since 1927 as vice-president and general manager. He came to Atlanta from Birmingham where he had been connected with the Alabama Power Company as electrical engineer, operating manager and vice-president.

A graduate of the Massachusetts Institute of Technology, he has achieved wide recognition as an electrical engineer executive. His present assignment in Europe, under the direction of the War Department, is as head of a commission to evaluate the effects of strategic bombing on power plants and other electrical facilities in enemy-occupied countries. The information thus assembled will be used by the American Air Forces in the war against Japan.

Mr. McManus joined the Georgia Power Company in 1927 as superintendent of district operations. The following year he was made assistant operating manager. He is an electrical engineering graduate of Alabama Poly-

C. B. McManus

technic Institute. He joined the Alabama Power Company in 1917 but left the following year to enter the Army. Returning to the Alabama Power Company after the war, he was appointed assistant operating engineer, superintendent of the Muscle Shoals steam-electric plant, and a division manager.

* * *

Charles E. Oakes, president and general manager of Birmingham Electric Company since July 1939, tendered his resignation, effective May 21st, to become president and general manager of the Pennsylvania Power & Light Company.

William McMillan Rogers, widely known Birmingham attorney, who has handled the company's legal affairs for a number of years as a member of the law firm of Bradley, Baldwin, All

White, was elected president to succeed Mr. Oakes. **Charles S. Thorn,** vice-president, will be advanced by the board at the same time to the position of vice-president and general manager.

Election of Mr. Rogers brings to the management of the company a local citizen who has made his home in Birmingham since 1915 and has been actively identified with many state and community activities. A native of Starkville, Miss., Mr. Rogers was educated in the public schools of Starkville and Mississippi A & M College, where he received a B. S. degree in electrical engineering in 1907 and subsequently attended Southwestern University and the University of Mississippi.

While a law student at the latter institution in 1911, he was appointed a Rhodes scholar from Mississippi and received his B. A. degree with first-class honors from Oxford University in 1914.

* * *

The electrical industry lost an outstanding leader and pioneer advocate of better light for better sight and human welfare with the death on May 8, of **Harold Freeman Barnes.**

Manager of General Electric Lamp Department's sales promotion division since 1931, with headquarters at Nela Park, Cleveland, Mr. Barnes succumbed to a lingering illness.

He gave freely of himself, it is pointed out by his intimate associates, to an industry, a company, and a family he intensely loved. "To these," they add, "he gave more than himself."

In recent years, Mr. Barnes dedicated his efforts to helping win the war faster. Effect of his contribution on the war effort—nationwide programs conceived by him and designed to increase industrial production through wider and more intelligent use of lamp and lighting tools—is re-

H. Freeman Barnes

"We make 50% savings on labor and cut material spoilage 20% with our two GREENLEE Hydraulic Benders," says George W. Hecht, Sup't., Collier Electric Co., Denver, Colorado. "On one job alone, time and material savings totaled about $600.00."

Here's another example of how GREENLEE Benders can more than pay for themselves on even the first job. For the GREENLEE is *one-man operated* to make fast, smooth, precise bends in pipe up to 4½", rigid and *thin-wall* conduit, tubing, bus-bars...right on the job!

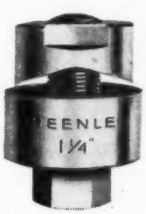
"An outstanding GREENLEE Bender feature, too, is its *compactness*," Mr. Hecht also reports. "It is easy to move about, simple to use."

Whatever your bending job, there's a GREENLEE Bender to do it. Write for free Catalog 33E on GREENLEE Hydraulic and Hand Benders and other tools for electrical work. Greenlee Tool Co., Division of Greenlee Bros. & Co., 1766 Columbia Avenue, Rockford, Illinois.

Special Notice: Greenlee Electricians' Bits now available in 10, 11, 12 sixteenths sizes.

Get Ready with Greenlee!

REGISTERED TOOLS
GREENLEE
FOR THE CRAFTSMAN



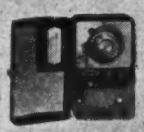
KNOCK-OUT TOOLS Eliminate time spent on drilling and filing to enlarge holes. In 1½ minutes or less you can cut a hole up to 3½" with a GREENLEE Cutter or Punch. Just insert tool in a knock-out or small drilled hole, give a few turns of the drive nut with an ordinary wrench! For clean, *round* holes in bakelite, hard rubber or any metal up to ⅛" thick.

OTHER GREENLEE TIME-SAVING TOOLS FOR ELECTRICAL WORK
Hand Benders • Joist Borers • Cable Pullers • Radio Chassis Punches • Pipe Pushers

Paragon TIMERS "TAKE A LOAD OFF YOUR MIND!"

Paragon automatic electric controls go far toward eliminating the fallible human element. Simply preset a Paragon instrument to do what you want—then forget it. It will automatically start and stop machinery, air conditioning systems, and other operating equipment . . . in fact, perform a whole host of "almost human" time control operations.

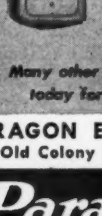
A unit for every time control need



Series 300—General purpose, self-starting synchronous motor operated time switch, self-lubricating, for controlling signs, stokers, blowers, pumps and other purposes. Accurate, rugged.

Series 800—Instantaneous reset, synchronous motor operated, time-delay for motor and tube protection. Used to stagger the closure of multiple circuit systems so that full load will not be applied at start. Has wide application.

Series 700—7-Day synchronous motor operated switch for heating and ventilating systems, lighting and pumping in churches, schools, stores, factories, mines, etc. Can be preset weekly for a weekly schedule. Daily on and off operations may be independently set.



Series 2500—Manually preset interval timer can be preset to perform a great variety of operations: to allow a given operation to continue for almost any predetermined time limit; and to close or open a circuit at the end of the preset time. Synchronous motor operated.

Many other types available. Write today for further information.

PARAGON ELECTRIC COMPANY
713 Old Colony Building, Chicago 5, Illinois

Paragon *Chicago*
BUILDERS OF ELECTRICAL EQUIPMENT SINCE 1905

garded as far reaching.

His wartime philosophy was forcefully expressed in a little pamphlet entitled: "The Last Hour of the War," a personal sentiment which has evoked wide interest within and outside the electrical world. His death, incidentally, occurred on V-E Day in the last hour of the European War.

* * *

Hugh B. Parris, formerly secretary and treasurer of Dallas Power & Light Company, was appointed vice-president and treasurer on May 8. Mr. Parris, a native of McKinney, Texas, started his electric utility career in

H. B. Parris

1914 as a clerk with the company's predecessor, the Dallas Electric Light & Power Company.

Mr. Parris has been an officer of the Dallas Power & Light Company since 1924 and a director since 1934. Since 1933, when he was appointed secretary and treasurer, he has served as the chief financial and accounting officer of the company.

* * *

Lt. Col. Ellis Fagan, director of operations of the 20th Ferrying Group, Nashville, Tenn., has been officially released from the service, to resume management of the Fagan Electric Company, Little Rock, Ark.

Colonel Fagan was called into service with the 154th Observation Squadron, Arkansas National Guard, in 1940 and placed on leave before the war to return home to direct contracts at the Arkansas Ordnance Plant, Pine Bluff Arsenal, Alcoa's alumina plant at Bauxite and the Longhorn Ordnance Plant, Marshall, Texas. Upon completion of electrical contracts by his company he asked for active service.

He returned to service in January, 1943, and was assigned to the Alaskan Division, Army Transport Service, with headquarters at Edmonton, Canada. He helped to survey the air route to Siberia for delivery of planes and supplies to the Russians. For the last six months of his Alaskan service he was commanding officer of the Army Air Base at White Horse, Canada.

Colonel Fagan was one of the first commercial pilots to be licensed in the state of Arkansas and the 1,244th in the United States, and he had 6,000 official flying hours at the time of his severance. He holds the highest Army pilot rating, that of senior pilot, with a rating to fly any class plane from a single-engine to a four-engine transport.

He is still a member of the Arkansas Senate, and received leave to serve in the 1945 session.

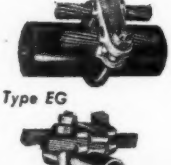
* * *

Frank C. Camus, city electrician, Shreveport, La., has been selected as a voting member on the Electrical Committee, of the National Fire Protection Association, representing the United States Conference of Mayors. Mr. Camus, who was formerly an alternate member of the committee, replaces J. D. Lynett, resigned. The U. S. Conference of Mayors, an or-

O.Z. GROUNDING DEVICES

Type QG

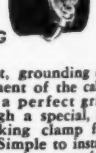
Type KG



Type EG

Type BG

Type DG



Type CG

These sturdy, corrosive-resistant, grounding devices ensure complete encirclement of the cable with a perfect grip, through a special, interlocking clamp feature. Simple to install, they make a perfect ground. For more information regarding the complete line of O-Z grounding devices and other electrical devices write for the 144-page O. Z. Catalog.

O. Z. ELECTRICAL PRODUCTS
- CONDUIT FITTINGS
- CABLE TERMINATORS
- JUNCTION BOXES
- SOLDERLESS CONNECTORS
- GROUNDING DEVICES
- POWER CONNECTORS

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342 BOND STREET - BROOKLYN, 2 N.Y.

Represented by
M. L. WHITMAN . . . . . 313 Bona Allen Bldg., Atlanta 3, Ga.
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8030

ization-member of the Electrical ommittee, has five voting represent-ves on the Electrical Committee. r. Camus' alternate will be David J. lbot, chief electrical inspector, hicago.

* * *

Gwilym A. Price has been appoint-executive vice-president of the estinghouse Electric Corp., Pitts-rgh, Pa., according to an announce-ent by **George H. Bucher,** president. r. Price will report to Mr. Bucher. Mr. Price was elected vice-president the company in September, 1943, d was elected to the Westinghouse oard of Directors in January of this

G. A. Price

ear. His responsibilities had included ettlement of the company's war con-racts.

Prior to his election as an officer of Westinghouse, Mr. Price had been resident of the Peoples-Pittsburgh rust Company, of Pittsburgh, since anuary, 1940, following three years s its vice-president in charge of trusts. He has served as a trust officer since 923 and as a vice-president of the ank since 1930.

* * *

The Graybar Electric Company, nc., announced recently the opening f a new branch office and fully-stock-d warehouse at 1310-12 Agnes Street, Corpus Christi, Texas. Formerly the ompany maintained only a sales ffice location in this city. **R. E. Broyles** has been appointed commer-ial manager in Corpus Christi with urisdiction over the new branch ffice and warehouse.

* * *

Three well known sales executives at General Electric's Nela Park have been advanced to new posts as part of reorganization program affecting

THE IWI MAN
WITH A WISE PLAN
knows that

MALLORY
CAPACITORS

Can take it!

Sturdy and strong, built to give good service for a long time, Mallory Capacitors last.

MALLORY
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are Standardized!

So you can meet any capacitor requirements, for round or square types, with less stock on your shelves.

MALLORY
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are listed in the IWI Blue Catalog, to make selection and purchase easy for you. Send for a catalog today

INSULATION AND WIRES IWI SERVICE

INSULATION & WIRES, INC.
2127 PINE STREET • ST. LOUIS, MO.

Time Tells the Story!

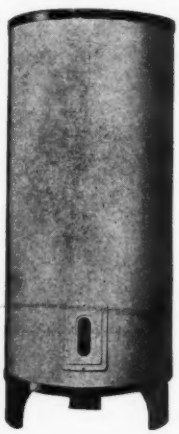
★ 16 YEARS OF SERVICE ★

HERE'S MORE PROOF OF CLARK'S RUGGED DEPENDABILITY

This early Clark heater was installed in 1929, in the home of Mrs. L. E. Dow, Sheffield Iowa, and is still in daily use. In outward appearance it resembles only slightly today's Clark models but the basic heating principle that enabled it to give such long, trouble-free service is almost identical with the Clark heater of today. Time and toughest service conditions have only given emphasis to the correctness of its engineering design.

"GENTLE HEAT"

High temperatures in heating water cause liming, scaling and the freeing of oxygen, all of which are destructive to standard tanks. In the Clark the heat is applied to the water in a wide-area, low-temperature band which entirely eliminates these destructive effects. If heating hard or soft water is a problem in your locality you can depend on the Clark to solve it.



★

A CLARK FRANCHISE FOR YOUR TERRITORY MAY STILL BE OPEN. WRITE FOR FULL DETAILS.

McGRAW ELECTRIC COMPANY
CLARK WATER HEATER DIVISION
5201 West 65th Street, Chicago 38

CLARK
ELECTRIC WATER HEATERS
A Toastmaster Product

O. H. Young

W. H. Robinson, Jr.

E. D. Stryker

home office operation of G. E. Lamp Department. Elevated to positions of greater responsibility are **O. H. Young, W. H. Robinson, Jr.,** and **E. D. Stryker.**

Mr. Young, who has been sales manager of all photolamp activities, will continue in that capacity. In addition, however, he will assume new duties and responsibilities assigned to him as part of lamp department's eastern sales division activities.

Mr. Robinson has been named sales manager of electric discharge lamps. He has figured prominently in all recent fluorescent activities conducted by G. E. Lamp Department and will continue in that work. In addition, he will be responsible for similar work on all other electric discharge lamps except the germicidal and glow types.

Mr. Stryker has been named sales manager of lighting equipment promotion. In his new responsibilities he will continue his activities with fixture manufacturers and "take on such other duties and responsibilities as may be assigned to him." Until lately a member of the Sales Promotion Division at Nela Park, Stryker has been transferred to G. E. Lamp Department's Western Sales Division.

* * *

The appointment of **J. N. A. Hawkins** as general sales manager of Industrial Electronic Products of Sylvania Electric Products Inc., has been announced by **Don G. Mitchell,** vice-president in charge of sales.

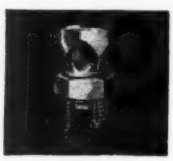
Mr. Hawkins, with Sylvania headquarters at 500 Fifth Avenue, New York City, will have responsibility for products involving applications of electronics to commerce and industry, and will also be concerned with some products in their development stages.

* * *

Robert E. Cramer has been named chief engineer of the American Steel & Wire Co., U. S. Steel Corp. subsidiary, succeeding **E. J. Reardon,** who recently resigned.

Mr. Cramer's thirty-five year association with U. S. Steel subsidiaries began in 1910, when he was employed as a blue print boy at the Schoenberger Works of the American Steel & Wire Co. at Pittsburgh.

He successively was made district engineer at the Pittsburgh office of the Wire Company and superintendent of engineering and maintenance at the Donora (Pa.) Steel & Wire Works, before being transferred to the Cleveland office in September, 1941, as a special engineer in the engineer-



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Electrical Connectors

WHAT WE SAVE IN WEIGHT YOU SAVE IN COSTS

Most value per dollar . . . most service and satisfaction. Figure it out . . . you're way ahead because ILSCO PRODUCTS are

12% cooler
50% lighter
75% lower price
99% pure electrolytic copper
100% conductivity

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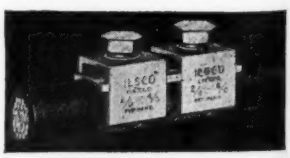

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ILSCO COPPER TU & PRODUCTS, CINCINNATI, O

H. K. Dewees

ing department. In March, 1942, he assumed the position of engineer of appropriations and properties which position he now relinquishes to become chief engineer.

* * *

H. K. Dewees Company, electrical manufacturers' representatives for the Southeast, have been appointed district representatives for Warren Telechron Company, and will supervise sales activities in the Southeast territory, **Roy W. Johnson,** vice-president of Warren Telechron Company, announced recently.

With headquarters at 141 Marietta St., N. W., Atlanta, Mr. Dewees will facilitate distribution of the company's electric alarm clocks, and act in an advisory capacity to industrial concerns using Telechron synchronous motors.

* * *

Two veteran Frigidaire employees, **C. S. Trigg** and **Paul J. Barnaby** have been appointed to key positions in the sales promotion department according to an announcement by **Ellsworth Gilbert,** sales promotion manager of Frigidaire Division, General Motors Corporation at Dayton, Ohio.

Mr. Trigg, formerly in charge of appliance training is now manager of appliance product promotion and Mr. Barnaby, formerly of the commercial training department is manager of the commercial product promotion.

C. S. Trigg has been employed by Frigidaire for fifteen years and has a diversified background in engineering, service, promotional, and training fields. Paul J. Barnaby brings to his new post 17 years of Frigidaire experience in the field and with the factory sales and training divisions.

* * *

Bern Dibner, founder of Burndy Engineering Company, who has been serving in the U. S. Army Air Force with the rank of major, has just been advanced to Lieutenant Colonel.

Lt. Colonel Dibner organized the Burndy Engineering Company, New York City, in 1924 to manufacture solderless electrical connectors, and he is well known throughout the industry for his developmental work in solderless type connectors. In civilian life, he did much to promote the use and acceptance of the indent-type of connector for public utility distribution work as well as for many other uses.

C. S. Trigg Paul J. Barnaby

NEW EQUIPMENT and MATERIALS

NEW BAGLESS CLEANER

There's no dirty bag—concealed or otherwise—on the new Filter Queen, the bagless vacuum cleaner manufactured by Health-Mor, Inc., 203 N. Wabash Ave., Chicago 1, Ill.

No longer is it necessary to clean a filthy germ-laden bag. Instead, simply empty a metal pan in which the dust collects and insert a fresh, clean, sanitary paper filter. The Filter Queen is ready to use again. For average home cleaning, empty the dust pan only about once in an entire month.

The Filter Queen sanitary filter is a scientifically designed and patented dust separator, composed of a special long-fibred mat of pure cellulose, chemically treated to give it the necessary strength and air filtering characteristics.

The Filter Queen is of sturdy constructed—small, compact, and completely sealed in an attractive metal container, which has been soundproofed, so that it can be used any time without broadcasting a penetrating disturbance. The quiet hum of Filter Queen is in striking contrast to the annoying racket of the ordinary cleaner.

HOME WIRING HANDBOOK

To simplify planning of modern wiring systems for homes within the popular price range, a new Home Wiring Handbook for architects, builders, wiring contractors, and financial institutions has been announced by Westinghouse Electric Corporation.

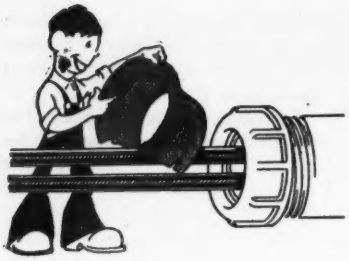
In this comprehensive reference book, homes have been divided into four price groups of varying gradations in electrification. For each of these groups, complete details are covered, including recommended electrical equipment (fixed and portable), outlets needed for each room, circuits required, control centers, feeders and service entrance, type of circuit protection, signal systems, telephone and radio.

More than 50 diagrams and illustrations are included in this 120-page handbook. It will be kept up-to-date with revision sheets mailed to purchasers in the event of any changes in the National Electric Code which would affect the book. It is wire bound with artificial leather cover, handy 5½x8-inch size.

The wiring handbook (B-3510) is available at production cost of $1.00 from the Industrial Relations Department, Westinghouse Electric Corporation, 306 Fourth Avenue, Pittsburgh 30, Pennsylvania.

TEST INSTRUMENTS FOLDER

Weston multi-purpose test instruments, from simple 2 or 3 range instruments, up to portable types containing as many as 33 ranges, are described in the new folder just published by the Weston Electrical Instrument Corporation, 617 Frelinghuysen Avenue, Newark 5, New Jersey. The line includes testing sets for servicing electronic equipment as well as multi-purpose testers for laboratory, manufacturing, and maintenance test requirements.



T&B INSULINER* SLEEVES Instantly Convert Any Cable Outlet Into a Code-‡ Approved Insulated Bushing

Here's how: Simply squeeze the two ends of the Insuliner Sleeve together and snap into place. You can install it before or after fishing, or right over the wires in old work. Inexpensive T&B Insuliner Sleeves come in all sizes, ½" to 6". For any standard conduit or EMT outlet. Patented. Approved by Underwriters Laboratories.

With Insuliner Sleeves in stock, your present conduit bushing stock will immediately service any insulated bushing requirement.

Under the T&B Plan, Insuliner Sleeves, like all other T&B wire fittings, are sold exclusively through the service organizations of T&B Electrical Wholesalers.

Get in touch with them or with any of our conveniently located offices today for Insuliner Sleeve Bulletin S-5.

The Thomas & Betts Co.,
Incorporated
Room 423
Citizens & Southern Bldg.
Atlanta 3, Ga.

The Thomas & Betts Co.,
Incorporated
P. O. Box 2372
Charlotte, North Carolina

The Thomas & Betts Co.,
Incorporated
518 Masonic Temple Bldg.
New Orleans 12, La.

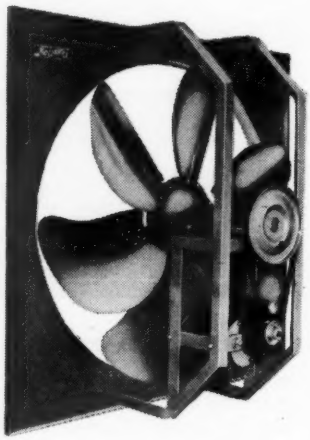
*Trademark Reg. U. S. Pat. Off.
‡See N.E. Code ¶3012b.

T&B
THE THOMAS & BETTS CO.
INCORPORATED
manufacturers of electrical fittings since 1898
ELIZABETH, 1, NEW JERSEY
In Canada: Thomas & Betts Ltd., Montreal

INDUSTRIAL FANS BULLETIN

Chelsea Fan and Blower Co., Inc., Irvington, New Jersey, has issued Bulletin 702, describing their line of industrial fans especially designed for churches, hotels, shops, factories, mills, schools, hospitals, and theatres.

Among the outstanding features of the industrial type fan are new streamline venturi orifice, greater volume; certified air rating, as per ASH&VE



method; ball bearing motors and shaft bearings, long life; die stamped blades, precision balance and alignment; V-belt drive, for efficiency and low power consumption; and all steel frame and orifice, rugged construction.

The fan is belt-driven for three reasons: —first, to save in motor costs; second, to reduce power consumption because smaller horsepower motors can be used; third to reduce the fan speed to give quiet operation. The frame is all steel, welded to a steel orifice. It is rigid, yet light in weight, simplifying installation.

ALL-STEEL LOUVERLITE

A new Smithcraft All-Steel Louverlite which provides an ideal fixture for the lighting of drafting rooms, schools, offices and institutions, has been announced by A. L. Smith Iron Company, Chelsea 50, Mass.

At first glance the most striking feature about this Smithcraft fixture is its trim and slim gracefulness, but after it is installed its many practical advantages begin to be appreciated. The reflectors direct a full flood of soft diffused light downward, yet they permit a small indirect component to adequately light the ceiling area. The special steel hinged egg-crate louvers, made in two sections, give easy access to the lamps—the starters are handy to reach, and the wiring runs along a special steel channel. All of which makes for completely simplified maintenance.

THERMOSTATIC CONTROL

For safe, accurate, automatic control of temperatures up to 650° F., seven types of bi-metal thermostats to fill a wide range of application are described in a new booklet announced by Westinghouse Electric Corporation, East Pittsburgh, Pa.

The new 20-page booklet describes and pictures (1) the Built-in Watchman Thermostat, for aircraft equipment, instrument and bandage sterilizers, motor and wiring protection, vulcanizers, radio equipment, oil purifiers and flat-irons; (2) the Clostemp Thermostat, for applications where space is limited such as in platens, irons and vulcanizers; (3) Uni-Therm thermostat, combining close control with small size and simple, compact mounting; (4) the Sentinel Thermostat, for roasters, water heaters, dehydrators and casseroles; (5) Guardsman Thermostat, combining close control sealing machines, ironing machines and other low-wattage heating appli-

MODERN ILLUMINATION

FLUORESCENT

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Our Engineering and Designing Staff For All Needs in Lighting at Your Disposal

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cations; (6) Water Heater Thermostat, for domestic storage type heaters; and (7) the Motorguard, for use on fractional and integral horsepower motors.

Copies of the booklet may be secured from P. O. Box 868, Westinghouse Electric Corporation, Pittsburgh 30, Pa.

EGGCRATE ARISTOLITE

A new fluorescent luminaire is announced by The Edwin F. Guth Company, 2615 Washington Ave., St. Louis 3, Mo., which combines lamp-shielding and glass-diffusion in the same luminaire. There is provided

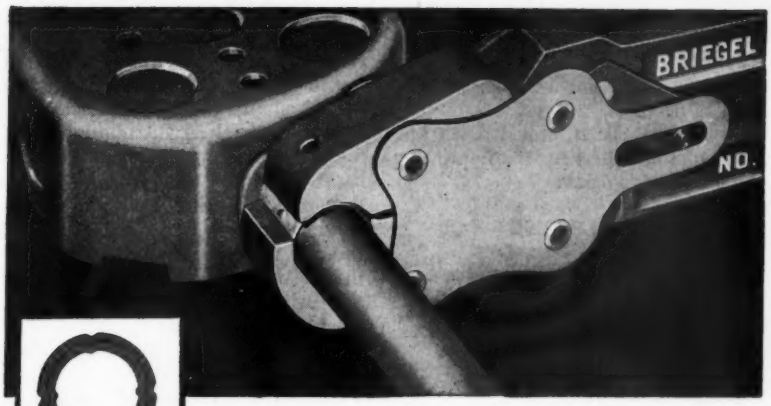
strong, efficient down-lighting through eggcrate louvres, plus diffused side-lighting through glass-panels.

The modern eggcrate Aristolite has panelled and die-cut ends which afford pleasing light-window design. Glass panels and eggcrates are separately removed for easy maintenance. The fixture is available for individual or continuous installation, and can be suspended from the ceiling, or mounted directly to same.

JOHN MECK RADIOS

John Meck Industries, Inc., of Plymouth, Indiana, are issuing to their radio servicemen dealers, a series of die-cut folders illustrating their post-war products.

The folders, approximately 3x4 inches, are in three colors and are cut to outline two radio sets and a phonograph they hope to produce within 60 days of the resumption of unlimited civilian production. The sets are a 5-tube ac-dc superheterodyne, approximately six inches high by nine inches wide and six inches deep in a plastic cabinet in walnut and white, or in two walnut wood styles. The other set is a 4-tube ac-dc superheterodyne in a plastic cabinet of modernistic design in walnut or white. This set is approximately 6 inches high by 3½ inches wide and 8 inches deep. The phonograph, designated as the Saratoga, is a 3-tube amplifier with a 4-inch electrodynamic speaker in an ivory plastic



Cross section Showing Indentations.

E·M·T·UP THE QUICK WAY
Two Squeezes and it's Set

TWO QUICK SQUEEZES give you Finer, Faster Conduit Connections. B-M Fittings do away with the twisting, turning and tightening of nuts and save you valuable time and materials. Then too, they are stronger, neater and much easier to work with in tight places. Start using B-M Fittings today. Have more satisfied customers—more profits from each job!
(All B-M Fittings carry the Underwriters Seal of Approval)

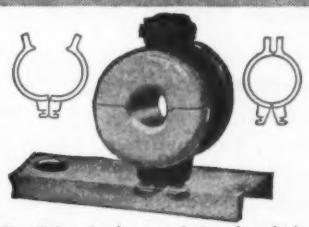
DISTRIBUTED BY
The M. B. Austin Co., Chicago, Ill.
Clayton Mark & Co., Evanston, Ill.
Clifton Conduit Co., Jersey Cy., N. J.
Gen. Electric Co., Bridgeport, Conn.
The Steelduct Co., Youngstown, Ohio
Enameled Metals, Pittsburgh, Penn.
National Enameling & Mfg. Co., Pittsburgh, Pa.
Triangle Conduit & Cable Co., New Brunswick, N. J.

Prompt Deliveries on Properly Rated Orders

BM
BRIEGEL METHOD TOOL CO. • Galva, Ill.

"EFFICIENCY" DEVICES FOR CONDUIT AND CABLE SUSPENSION

EFFICIENCY NESTED CONDUCTOR RACKS



Nested Conductor Racks available for Cable diameters from 5/16" to 2-3/8".

● Simplicity is keynoted in the design of the EFFICIENCY bushing rack. Note that a single bolt supports the bushing and at the same time clamps the bushing support to the rack. Each fitting is a separate unit . . . permits the installation of each cable independently.

The EFFICIENCY rack is constructed of standard rolled steel channel — sizes according to size of bushings and number of mountings for each rack. Bushing supports are malleable iron. For A.C. service a brass half is furnished. Bushings are glazed porcelain, extra large and heavy.

Complete information on all EFFICIENCY Electrical Devices is available. Write today for your copy of Catalog No. 38B.

Efficiency
ELECTRIC AND MANUFACTURING CO.
EAST PALESTINE, OHIO

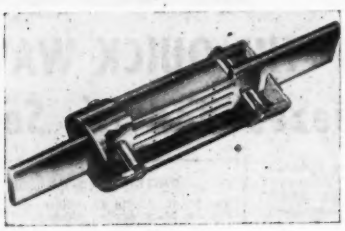
MANUFACTURERS OF EFFICIENCY ELECTRICAL DEVICES FOR CONDUIT, WIRE AND CABLE SUSPENSION

cabinet. It will be approximately 11 inches wide, 3 inches high and 15 inches deep.

Space has been provided on the back of the folders for the imprinting of the dealer's name.

NON-RENEWABLE FUSE

Royal Electric Company, Inc., Pawtucket, R. I., has anonunced a new construction of the firm's Royal-Noark non-renewable cartridge fuse, on which deliveries are now being



made. A cut-away of the new design, radically different from anything heretofore offered by a fuse manufacturer, is shown in the accompanying illustration.

The fuse incorporates a "grid" link, which, on the size illustrated, replaces four single links. There are, therefore, only two solder connections to the blades, instead of eight, reducing the possibility of loose contacts, and increasing the heat distribution. Further, by employing a metal crossbar to position the link and blade, they can be anchored into the complete assembly by a stud riveted through the ferrule and casing into the crossbar. This method of holding the parts of the fuse together prevents twisting and turning.

Royal claims that this new "girder" assembly eliminates loose contacts and reduces heat, thereby giving greater protection to the equipment on the circuit the fuse serves.

DISTRIBUTION BOOKLET

Management, production, and purchasing executives of electrical manufacturers, as well as those of large businesses using electrical equipment, will want a copy of "Tomorrow's Electrical Distribution-Via Graybar." This booklet, printed in two colors, tells a revealing story in 28 pages of copy and charts of one of the world's largest and oldest electrical distributors.

Treating separately the operation and function of the distributor and the manufacturer, the new booklet explains how each cooperates to serve the customer, and describes in detail how Graybar, through it's 75 years of experience, applies the latest in wholesaling and merchandising methods. It also shows how Graybar's national network of warehouses and offices have fulfilled demands made during the stress of war and how this same organization will play a vital part in helping to solve the all-important problems of lower-cost distribution in the prewar world of tomorrow.

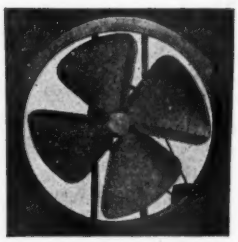
Your copy of this booklet can be obtained by writing on your company letterhead to the Graybar Electric Company, Inc., 420 Lexington Ave., New York 17, New York.

NEVERLIFT IRON

To acquaint the public with the fact that all postwar irons will not be essentially alike, and to promote large volume sales of Proctor irons postwar, the Proctor Electric Company, of Philadelphia, Pa., is furnishing electrical appliance dealers with a free dealer display featuring their famous Neverlift iron. This iron has an exclusive work-saving feature which takes the lift work out of ironing. It has been estimated that during the course

THE "Fresh-Air MAKER"

provides fully the comfort and ventilation so essential in army barracks, mess halls, hospitals, headquarters, theaters and other military buildings. Its fine design and sound construction meet the specifications drawn for army fans and it is particularly adaptable to the various types of installations found in army buildings.



HY-DUTY BLOWERS

Single Inlet—Double Inlet. 400 CFM to 12,500 CFM.

Single Inlet Blower illustrated at left is particularly adapted for ventilation of mess halls in military establishments.

VENTILATING DIVISION
SCHWITZER-CUMMINS COMPANY
1125 MASSACHUSETTS AVE. · INDIANAPOLIS 7, U. S. A.

"Dixie-Maid" ELECTRIC CHURN

NOW AVAILABLE! Churns whole milk. Thumb screw adjustment. Slight pressure adjusts or releases dasher to fit any 3 to 5 gallon container. Slow-speed, long-life motor prevents overheating. Better agitation produces more butter faster. Improved rust-proof dasher. New splash-proof plate. Improved design eliminates vibration. Easy to clean. Costs few cents a month to operate. Sold through trade channels only. From your jobber, or order direct. (Containers not sold.) Manufactured and Guaranteed by

SOUTHERN ELECTRIC PRODUCTS, Anderson, S.C

Connecting Diagrams for Lap-Wound Induction Motors

Every man concerned with motor rewinding will want a copy of this new publication by A. C. Roe which contains 72 modern connecting diagrams for induction motors of from 4 to 12 poles. The diagrams are arranged for dual voltage connections and best magnetic balance. A copy of this 132 page book is available with each 3-year subscription to Electrical South—total cost, $3. Write at once to

ELECTRICAL SOUTH
1020 Grant Bldg. Atlanta 3, Ga.

of a week's ironing for a family of three a total of 7,050 pounds of dead weight is lifted by the person ironing if she uses an ordinary flatiron. The Neverlift iron permits the housewife to do her ironing without any lifting or tilting whatsoever.

The display is colorful, attractive, and eye-catching, and will liven up the dealer's store while doing a worthwhile missionary job for bigger future sales.

NEW TYPE STARTERS

Two new manual re-set type starters for 100-watt fluorescent lamps, designated as COP-6 and COP-64, have been announced by Sylvania Electric Products, Inc., of Salem, Mass. The COP-6 is a two-contact starter, while the COP-64 is provided with four contacts for use in fixtures designed for another type of starting circuit. These starters are specially designed to cut out deactivated lamps and to eliminate lamp flashing and damage to ballasts. A push button manual re-set facilitates normal lamp operation when faulty lamps are replaced. This type of starter is recommended for all installations and particularly for those where immediate replacement of a failed lamp is difficult. A similar starter for 40-watt lamps carries the Catalog Number COP-40.

SOLDERING TOOLS

The Ideal Commutator Dresser Co., 1292 Park Ave., Sycamore, Ill., has announced Thermo-Grip electric soldering tools for new higher melting point solders.

The master size Thermo-Grip set includes a No. 5 power unit and any one or more of nine attachments. Each attachment is designed to do a specific type of soldering job. Power unit has make-and-break connectors so that any attachment can be used, then quickly changed for another. The Ideal electric soldering tools and methods can speed up production and reduce costs of soldering. Complete information on the new tools is given in a new Ideal bulletin, available upon request.

Shipyard Standard of Electrical Work

(*Continued from page 48*)

mended that definite safety rules be made for the use of electric welding conductor systems, that is arc welding systems used in ship repair work.

During the early part of the war it took a lot of preaching and inspection work to get some semblance of safety in the use of arc welding conductor circuits. We are still on the anxious seat in this respect as it is hard to convince the average welder that a serious fire hazard may be introduced.

It is not the intention of this article to accuse any one of deliberately creating active electrical hazards. We know that electrical contractors have been pushed to finish a job and that some half-finished jobs have had to be turned out. Electrical construction on ship board seems to be treated with the same indifference that most persons are inclined to treat electrical equipment in their homes and commercial buildings. We are really in the dark ages, as far as the average person is concerned with the efficacy of their electrical equipment. We see people who spend oodles of money for decoration. If it is a factory there is no hesitancy about repairing bearings, belts or any mechanical equipment but when it comes to making repairs to a worn out motor, wiring or other electrical gadget, the entire problem seems to be obscured in mystery. Fix everything except the electrical equipment seems to be the policy except in some instances.

Rural Electrification Operating Experience

(*Continued from page 46*)

where we attempt to provide indoor work for our crews, thus relieving the work authorization of this day's expense.

Our experience with contracting has been completely successful and we would not hesitate in recommending it to anyone assuming that competent inspection is given by the company

NEW LOW PRICES See Your JOBBER

IDEAL "WIRE-NUTS"
(Solderless, Tapeless Wire Connectors)

Strip Wires, Screw on That's All

The new low prices still further reduce the cost of making wire joints in wiring of factories, buildings, homes, etc.

Leading electrical contractors are using millions of IDEAL "Wire-Nuts" because they're better electrically — stronger mechanically. Easy to apply — strip wires, screw on — that's all! Approved by Underwriters' Laboratories, Inc.

PROMPT DELIVERY

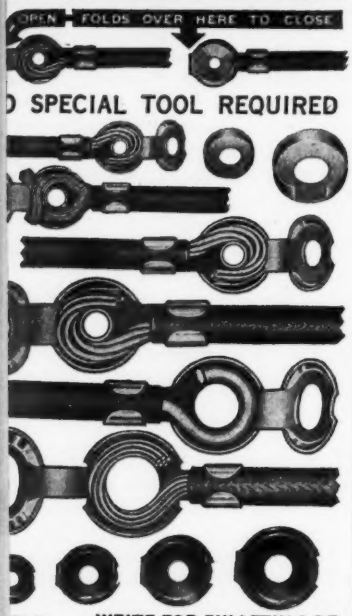
Electrical Products Division

IDEAL COMMUTATOR DRESSER CO.
Sales Offices in All Principal Cities

IDEAL Sycamore

1017 Park Ave., Sycamore, Ill.

OLDING **DOUBLE** CUPPED
★ WASHER LUGS ★
SIZE and TYPE *for every need!*



O SPECIAL TOOL REQUIRED

WRITE FOR BULLETIN 8-DF
KRUEGER & HUDEPOHL
Solderless Terminal Lugs and Connectors
VINE AT THIRD—E S • CINCINNATI 2, OHIO

HELWIG SPEER
Carbon Products

ultiflex Brushes
Give
etter Commutation
onger Life
ess Commutator Wear
hat Extra Demand Required
etter All Around Performance
EP THE BONDS YOU BUY

LWIG COMPANY
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Southern Offices:
323 Northwest Second St.,
Oklahoma City 2, Oklahoma
Block McKinney, Houston 3, Texas
Vashington Avenue, St. Louis 3, Missouri

With the type of construction that we have had to offer a contractor, most of our work has been done on a cost plus basis rather than the fixed bid system. This was due to the fact that most of our extensions were short and in scattered localities. We have, of course, learned that contractors demand certain things. First that it is impractical to start with less than 20 miles of line in a certain working radius. Second, a legible construction print with pole list and right-of-way summary. Third, all of the material on the job, and fourth, prompt inspection and payment.

Design a Sign That Helps Sell

(*Continued from page 28*)

No doubt some signs, after the war, will have provision for changeable messages and this can be an excellent means of advertising.

"Besides the copy there is the matter of choosing the colors of the lighting. Color plays an important part in night lighting and some concerns also leave their neon signs on in the daytime for added brilliance.

"In buying an electric sign, the thing to do is to select an established sign company, one which is qualified to render an expert advisory service as to the design of the sign as well as the message carried by it. It should be remembered that the average sign lasts a long time and reflects the character of the concern. Before long it becomes a familiar landmark, helping to sell goodwill as well as merchandise. Censequently a quality sign should be selected, one which carries pride of ownership and reflects credit to the establishment.

"It is certainly fitting that an electric company which deals in lighting and electric service should have a first class electric sign. Many improvements are being made and have been made in lighting and these will no doubt be reflected in the character of signs to be seen after the war."

Glass Guns Win An Old War

(*Continued from page 23*)

public interest and can earn quick acceptance among home owners.

Tremendous additional markets, whose possibilities have as yet scarcely been sampled, await only the removal of final restrictions on germicidal lamps and fixtures. Contractors and wholesalers who set out to protect the millions of America's white collar workers in office and public buildings are faced with a job whose potentialities for profit and service can hardly be estimated.

Once the advantages of ultraviolet air sterlization are demonstrated to them, theater, restaurant and transportation executives may well head the parade to supply germicidal protection to their patrons. Clubs, public auditoriums and other similar meeting places will further expand the market for germicidal installation contracts. As soon as initial demonstration installations are made in stores, retailers in every line will be quick to recognize the publicity value of offering the protection of sanitized air to their customers. The market for commercial applications, virtually untouched, will broaden the base for planned sales and service offered by those who are trained and equipped to merchandise this new health safeguard.

Other applications for a smaller but steady volume of germicidal units will be found in the manufacture of air conditioning equipment and in the food and packaging industries. Here this new protective device will find numerous uses in both the sterlization of air and exposed surface.

Summing up, the immediate educational and promotional job is directly comparable in size and opportunity to the long-term and never-ending campaigns for the protection of public water and milk supply. Lasting opportunity for the installation of germicidal ultraviolet sterilizing agents is assured by the fact that, unlike water and milk, air is continually being re-infected by many of the very individuals for whom it is disinfected.

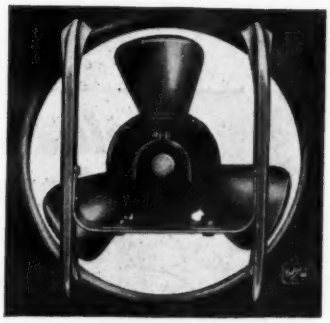
It is obvious that, in the very near future, air disinfection with guns of glass seems certain to make a basis contribution to public health. A fresh source of inspiration for industrial and commercial designers and architects, and a record demand for the equipment to be supplied by utility, contractor, and wholesaler men are to be found in a planned germicidal campaign, opening up to both groups a new and broadened opportunity for public service.

Solving Postwar Personnel Problems

(*Continued from page 17*)

happy employees who in all probability will have to get along on less money than they are making now. And what of the returning defense workers with their high rates of pay

HUSKY
for
L-O-N-G LIFE



When you install a Breezo fan, you can forget it. "Heavy-duty construction" applied to these fans means exactly what it says,—they are built to operate continuously with no attention except for lubrication. Because the square panel is rigid and strong, with welded-on arms, unskilled labor can safely install Breezo fans. Motors are standard makes suitable for continuous service.

Six sizes available to 24", for practically any current.

Write for Bulletin 3222-C giving complete details.

BUFFALO FORGE COMPANY

210 MORTIMER STREET BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

ARMY E NAVY

"first for fans"

"Buffalo" BREEZO

TOPS THEM ALL

Pat. Nos. 2200443-2228210

Lloyd

AUTOMATIC STARTER *in the* **RED PLASTIC CAN**

- Locks out deactivated, f ering, blinking lamps.
- Resets automatically. need to touch the starte
- Provides new economy fluorescent lighting. Pre overheating. Increases lif ballast. Saves maintenance power costs.
- Life of starter is many greater than that of av lamp.

In the NEW **RED PLASTIC C.**

STRONGER

Higher Dielectric Stren

Listed and Approved by Underw Lab. Inc.

Certified by Electrical Testing Spec. 6

LLOYD PRODUCTS COMPAN

Dept. ES-6 Providence 5, R

23 Branch Offices and Warehouses

LLOYD POLICY INSURES QUALITY

d overtime who will have to adjust private industry's lower scale?

Mr. Mathis has stated that he be-ves every firm, no matter of what e organization, should have one cer-in person delegated to handling per-nnel problems.

But just what are the duties of a rsonnel manager? Personnel man-ers in large firms have often com-ained that they had difficulty in ex-aining to their wives just what they d to earn their pay. Many of us cture them vaguely as being con-rned with fitting square pegs in uare holes and round pegs in round les, but that is only the beginning. areful personnel work can decrease erhead, improve efficiency, increase oduction, and relieve the manage-ent of many of the usual headaches.

The man in charge of personnel uld keep track of many little things. e would consider, from the em-oyees viewpoint, the matter of clean st rooms with mirrors, lockers, soap d towels; places to eat; etc.

Morale is made up of a lot of little things.

A department head might be an introverted type of person, valuable in his job because he really knows it, but unfit to handle other people. A good man, in charge of personnel, would spot this immediately. He could consult with the head of the company about shifting the introverted department head to a more congenial job, or he could talk with the manager diplomatically and make him see that a change to a more extroverted type of personality was called for. Given the right incentive a person can make some change from introvert to extrovert. Concrete suggestions might be made, showing him the necessity for stopping to chat with his employees occasionally, for taking an interest in them and their problems, for not snapping them off if they disturbed him when he was busy. Introverts are usually intelligent and deep thinkers and would be reasonable about changing if approached correctly.

This is just one illustration of how a personnel man can operate to increase efficiency. Unless some one person is delegated to watch for such things nothing is done about them until the situation becomes harmfully acute.

A study of personnel work can pay rich dividends. The man we mention has appointed his store manager to spend some time now studying personnel relations. In small organizations, the owner himself could profitably look into the subject.

A study of personnel work can pay rich dividends. Every company should have one person delegated to handling personnel problems. Following is a list of good books on the subject which can be recommended to the man supervising personnel work.

The Rest of Your Life
by Leo Sherne
(Doubleday Doran)

Personnel Management
by Dale Yoder
(Prentice Hall)

Problems in Personnel Management—by Daniel Bloomfield
(H. W. Wilson Co.)

Profitable Personnel Practice
by Henry Bruers

Personnel Selection
by C. A. Drake
(McGraw Hill)

Human Relations in Changing Industry—by H. Walker
(Prentice Hall)

Sharing Information with Employees—by A. R. Heron
(Oxford University Press)

What People Want From Business—by J. D. Houser
(McGraw Hill)

Training Workers and Supervisors—by Chas. Reitell
(The Roland Press)

How to Select and Direct the Office Staff—by E. B. Rubin
(Harper and Brox.)

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Skiltools Drills & Sanders
Simmonds Saws, Files, Rasps
Simplex Vises and Clamps
Sioux Drills and Sanders
Star Hack Saws & Blades
Starrett Micrometers-Gauges
Thor Drills & Sanders
Universal Gear Pullers
Utica Pliers & Wrenches
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Williams Wrenches & Sockets
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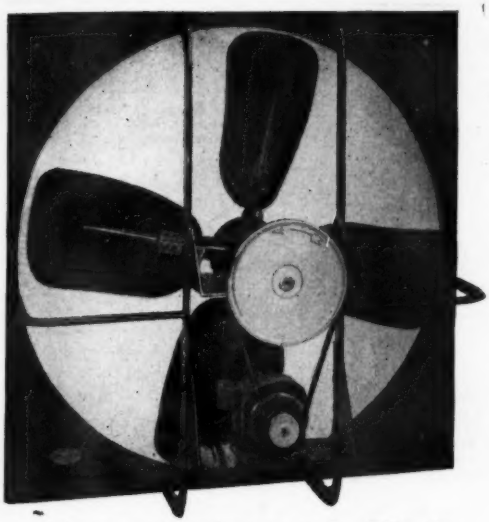

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